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AS TO STRIKES AND UNREST.

THERE NEVER WAS A TIME in the memory of man when so much thought was put upon industrial conditions as at the present. Pamphlets by the ton are sent broadcast, by Government, by banks, by individuals. Profit sharing, shop parliaments, workingmen's councils, pension plans, beneficent legislation, are but a few of the panaceas earnestly advocated. Most, if not all of them, have been tried, and more during the past year than in any previous year. And the number of labor rows has been the greatest yet. It is only fair to say, however, that the benefits above enumerated were not responsible for the labor unrest. That was largely a war aftermath.

There should be some sane basis upon which industries could be run which would obviate unrest and strikes. As we ponder the subject, it occurs to us that the Standard Oil Company, of all the big corporations, does not seem to be strike stricken. If that is so, what is the secret? John D. Rockefeller, Jr., who speaks wisely and well, recently said:

"The Community's right to representation in the control of industry and in the shaping of industrial policies is similar to that of the other parties" (namely, Capital, Management, and Labor). "Were it not for the Community's contribution, in maintaining law and order, in providing agencies of transportation and communication, in furnishing systems of money and credit and in rendering other services—all involving enormous outlays—the operation of Capital, Management and Labor would be enormously hampered, if not rendered well nigh impossible.

"The Community, furthermore, is the consumer of the product of industry, and the money which it pays for the product reimburses Capital for its advances, and ultimately provides the wages, salaries and profits that are distributed among the other parties."

That is good talk, even if gasoline is high. But exactly how does the S O C O deal with the walking delegate and the agent of the Soviet? Is it not possible that the industrial giants who founded the greatest of American enterprises have solved the problem and are perhaps themselves unaware of it?

THE RUBBER CORED GOLF BALL.

TALK OF STANDARDIZING GOLF BALLS, and even of a return to the solid gutta ball is in the air. It is all because of the far flying rubber cored ball. From the day of its advent it very much upset oldtime golfers. That a Yankee should produce a ball that made the "guttie" seem like a lump of inert dough was unbelievable. And that this golfing world should accept it with prompt enthusiasm was almost criminal.

So the rulers in golfdom ponder and plot to stay the long flights and to get back to the ancient one hundred and fifty yard drive. Of course it cannot be done. Professional, amateur and dub yearn for distance. If a half-mile ball appears it will be eagerly bought and universally used.

Standardization spells the end of experiment and the death of progress. Better "bide a wee."

RUBBER MACHINERY TRIUMPHS.

FROM THE BEGINNING of rubber manufacture, in the 'forties, the machinery was of the simplest, washers, mixers and calenders, together with churns and spreaders and for curing, dry heaters, steam vulcanizers, and presses comprised the usual equipment. From time to time some minor machine, usually borrowed from some other industry, was installed and its presence kept secret as long as possible. For years the only notable change was in the line of improvement of existing machines. This resulted in huge washers and mixers, mammoth calenders, gigantic presses and a great variety of spreaders. To be sure, an occasional invention appeared as in the sole cutting, hose making, and ball making machines.

The industry, however, continued one in which most of the work of making up was done by hand. The knife, die, roller and stitcher reigned supreme. For decades no notable machine appeared that in any way altered the solution.

With the sudden demand for tires, however, another spirit was almost at once evident. Greatly increased production was only to be reached by the help of machinery. Machines, therefore, began to appear.

In 1909 the records show 20 new machines produced for rubber use and in the following ten years the production gradually increased until 200 new machines appeared in 1919. These, as would be expected, were chiefly for use in tire manufacture.

At the same time, however, the impetus given to one branch of the industry was reflected in the others, and in shoes, druggists' sundries and mechanical goods new processes and new machines came into being.

This growth in mechanics is not only phenomenal but is one of the surest indications of the stability of the business. It assures, more than anything else, its ability to compete with all comers. All of the valuable machines will without doubt be copied and used. But the ability to create cannot be copied nor counterfeited and therein lies the key to continual success.

CRIPPLE CREEK RUBBER.

TEN YEARS AGO Dr. J. C. Ross discovered in the low-grade gold ore of Cripple Creek a product "that was high-grade caoutchouc." This is so because he said it and the press of the country affirmed it. Even after wasting a half score of years to welcome "Cripple Creek rubber" we do not say the learned Ross was a falsifier or that he was even mistaken. We, however, venture to point out that the gold mine operators who claim that excessive labor costs are likely to close their mines, may be overlooking a valuable product. Why not mine the rubber and sell the gold as a by-product?

RUBBER STEALING STOPPED.

ONE OF THE LEAST KNOWN ACCOMPLISHMENTS of the Treasury Department and one for which rubber manufacturers cannot be too grateful was the campaign to break up the gangs that subsisted by the systematic looting of freight from cars in the yards and in transit. It is a disgraceful fact that shippers had most to fear from railroad employes who helped themselves liberally to goods entrusted to their care. The losses paid by the railroads amounted to $120,000,000 in four years, half of which was due to the railroad men's pilferings. Crude rubber was a favorite article of loot, being easily disposed of and almost impossible to identify. A law passed by Congress, called the Carlin bill, providing heavy penalties for thefts of this nature did but little good.

When the Government took charge of the railroads it took to itself the task of rounding up and punishing the thieves. More than 1,000 freight car thieves were arrested, over 500 were convicted, and 250 received prison sentences. Judges on the bench showed no mercy to this class of offenders, and for the first time in years rubber in transit was safe. This is not, however, an argument for government ownership.

PLANTING FOR PLASTICS.

GUM ELASTIC, once a wild product, is now one of the most successful plantation products. Gum plastic, in other words gutta percha, still continues almost wholly a product of the wild. This, too, in spite of the constantly increasing commercial uses and abnormally high prices. The great gutta producers, the Sapotads, are trees of slow growth, found only in the real tropics. Capital could not probably be secured to plant the *Dichopsis,* the *Mimusops* or the *Achras Sapota.*

There are, however, many shrubs in the tropics, subtropics, and in the temperate zones that carry plastic gums. Is not an examination of all of them about due? Further, is it not perfectly possible that taken under cultivation some of them might add notably to the world's supply of gum plastic?

CHEWING CHICLE.

THE CHEWING GUM HABIT, in spite of the efforts of the fastidious, grows apace. The American troops carried it to England and France where it seems to be established. Now it is moving Westward, so much so that a big factory is to be established on the Pacific Coast. Soon it will move on to the Orient. Nor is this to be too much regretted. There are worse habits. Tobacco or betel nut chewing are more offensive. Moreover athletes and aviators say gum is helpful, physicians say it cures gout and dyspepsia, and (this has not been verified) it is said that the Cockney Englishman with a wad of gum in his mouth does no longer drop his h's.

PNEUMATIC VS. SOLID TRUCK TIRES.

IT IS BECOMING MORE AND MORE EVIDENT that the pneumatic tire is likely to oust the solid on the heavy truck, just as it did on light vehicles. The first cost is naturally heavy, and punctures unavoidable, but the saving more than offsets both of these items. Twice as much speed is possible without injury either to engine or freight, and the weight of the chassis can safely be reduced nearly one half. Big trucks are equipped with "giant pneumatics" to-day. One wonders if in time these huge tires will be pigmies compared with the tires of the future.

Twentieth Annual Dinner of The Rubber Association of America, Inc.

WITH 1,060 MEMBERS AND GUESTS present, an exquisite menu, three prominent speakers, and excellent music, the dinner at the Waldorf-Astoria on the evening of January 5, 1920, was a distinct success.

Despite the prevailing drought, this being the first dry banquet in the history of the association, there was no lack of enthusiasm. Indeed, all present made light of the matter, the speakers capitalized the situation and several humorous allusions to the advent of national prohibition created considerable merriment.

Prior to the dinner the members and their guests assembled informally in the various reception rooms, renewing old acquaintances and making new ones. Upon the opening of the grand ball-room doors the banqueters took their allotted places in the beautifully decorated hall to the tune of a spirited march by the orchestra. On account of the greatly increased attendance the main floor proved inadequate and twenty-five tables had to be placed in the first tier boxes. Each guest was provided with a tasteful souvenir program and menu bearing the seal of the association.

SENATOR WALTER E. EDGE.

During the banquet popular selections by the orchestra lent added zest to the choice viands, and after the diners had done full justice to the final course the assemblage was called to order by the toastmaster, Homer E. Sawyer. Meanwhile the balconies had filled with ladies come to witness the animated scene and to hear the speeches.

After a standing toast to the President of the United States had been drunk to the air of "The Star Spangled Banner," the toastmaster gracefully waived the more or less customary presidential address in order more speedily to present the distinguished guests of the evening. He had prepared an elaborate address on industrial relations, he explained, but Mr. Schwab had very kindly offered to take it off his hands. However, as president of the association, Mr. Sawyer bespoke the gratitude of its members in behalf of the Traffic, Statistical, Legislative, Foreign trade and Divisional Committees, whose good work in connection with the standardization and conservation which were undertaken during the war will be of equal benefit in peace times. He also complimented Mr. De Lisser and the Dinner Committee upon the complete success of their arrangements for the evening.

SENATOR EDGE'S ADDRESS.

Honorable Walter E. Edge, United States Senator from Trenton, New Jersey, spoke on reconstruction policies. Referring to the dilatory tactics of the Senate, and asserting that this country is practically waiting on Congress, his address was in part as follows:

Emerging from a war but a little over a year ago so successfully, with the plaudits of all the nations of the world, the admiration and the respect even of our enemies, the entire world speaking of America's part with pride and appreciation—to-day, successful in war, we have not demonstrated the same ability to be successful in times of peace. Business has been hesitating, conditions have been uncertain—continued strife between capital and labor, and all the difficulties, apparently, before us, are yet in great part to be solved.

GOVERNMENT MUST COOPERATE WITH BUSINESS.

The question is, what is the solution? Fundamentally, my view of the solution—and I will pass over the question very rapidly—fundamentally my view of the solution is simply this: that the government of a nation just as the government of a state, should not enter into a business, but should cooperate with business. A government that has plainly demonstrated that it cannot run its own business successfully, cannot run the business that has been run by the business world. The only thing the Government can do in my judgment to bring the Government of the country—just as we tried in a modest way to do in New Jersey—to bring the Government where the people may have control of it, is to take advantage of the Constitution—and it is a mighty liberal document—and to cooperate with business; regulate business where it is necessary—do not overregulate it—but choose the great powers of the Government and the great powers that are centralized there and have them encourage business and initiate an enterprise and energy that in the past has made the country great and has given us the position that we occupy to-day among the countries of the world.

PROSPERITY REQUIRES A LARGE FOREIGN BUSINESS.

I have been somewhat interested in a modest way to try to help solve some of these problems, in seeing if it were not possible to pass legislation to enable us to do a larger business abroad. You are interested in exportation. You will have to be interested in exportation if your business is going to develop. We have built a magnificent merchant marine, and you have at your table tonight the one man who is mainly responsible for the making of a businesslike merchant marine.

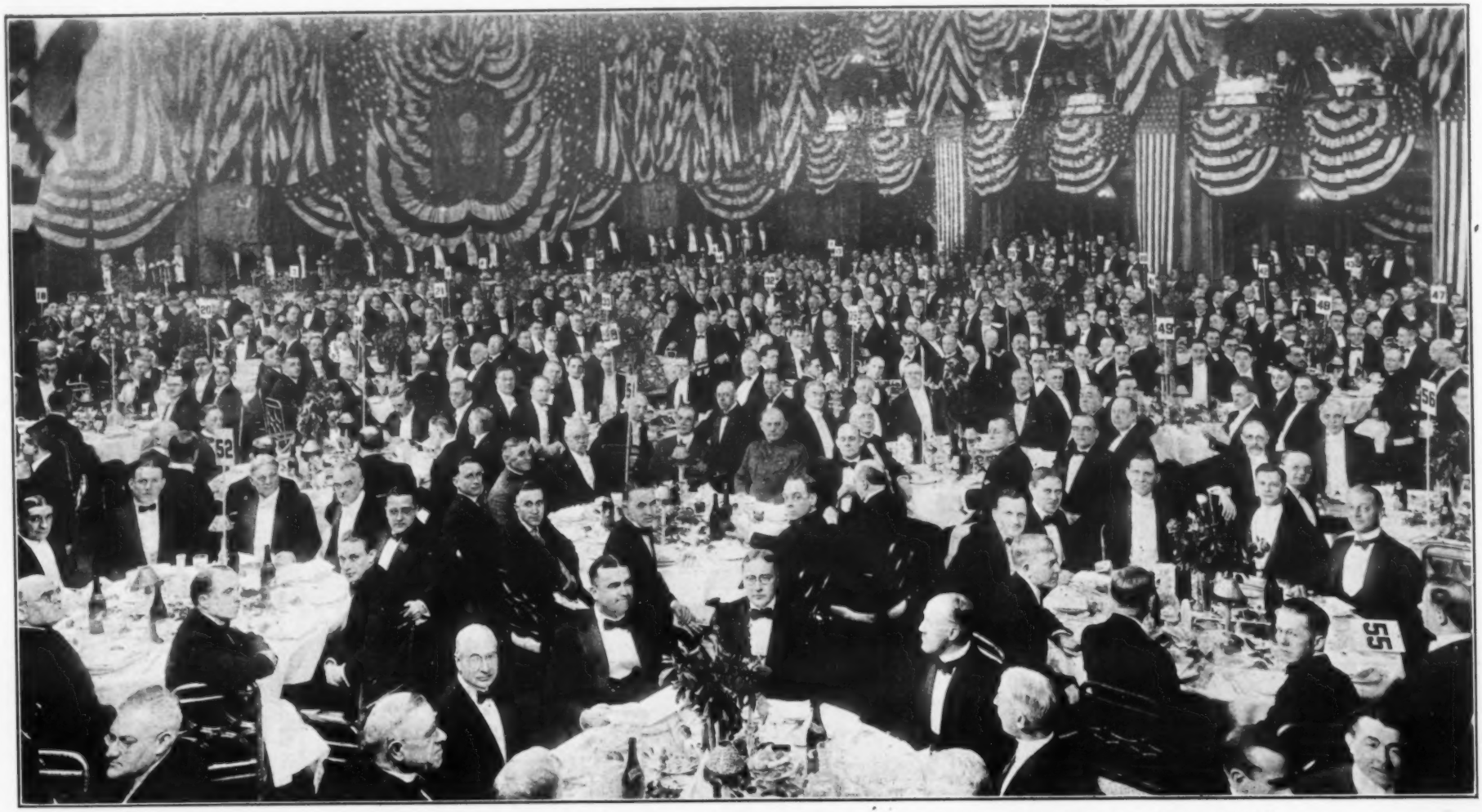
What in the name of heaven is the good of a merchant marine if we are going to send it abroad filled with ballast? We have got to send it abroad filled with American goods and products, or the merchant marine might just as well be scrapped in Hog Island or Cramp's, or some of the other shipyards of the country.

We can't exist in this country to-day—we occupy a position at the head of the council table of all the nations of the world, we occupy it and it is up to us to keep it—we can't exist in this country to-day simply manufacturing goods and selling goods to ourselves. I have absolutely no patience with the thought and the idea that there should be an embargo on American products—at times perhaps on some specific food supply or another, yes—but as a general policy or proposition that there should be an embargo on American products, far from it. The way this country is going to prosper and continue to broaden and hold the position that it has gained is by doing business with all the countries of the world and by using the merchant marine that Mr. Schwab and his associates brought together, so that the American flag will go to every port in every part of the world—the only way that the country can possibly prosper.

BANKING FACILITIES MUST BE ENLARGED.

And we are met with this condition: that we can't send goods abroad unless we are going to be paid for them. We are still business men. We have a good lot of humanitarian feeling and we demonstrated that, and I hope we shall always have it, and we are ready to help rehabilitate Europe, but at the same time it must be a business proposition. We can't to-day send your rubber goods abroad unless we give one or two or three years' credit, as a rule, that is, in big supplies. They have not the money. They have only securities. We have the goods. We have the ships. We want to do business with them. Then the natural

The Rubber Association Banquet.



TWENTIETH ANNUAL DINNER OF THE RUBBER ASSOCIATION OF AMERICA, INC., AT THE WALDORF-ASTORIA, NEW YORK CITY, JANUARY 5, 1920.

question was, "How can those—to use the popular term—various conditions be functioned?" Simply by enlarging the American banking system, just as we establish a bank here or in a small town or a large town to-day and do a domestic business and develop the business there; enlarge our banking system so that we can do business with them. They are doing it in England and they are taking the South American trade, and they are going to beat us right to it unless we get busy. Somebody ought to take advantage of the world's great opportunities. It is the natural evolution from the great World War.

INTERNATIONAL TRADE BANKS.

We passed a bill providing that we can now establish, under the Federal Reserve, trade banks for international banking. What do they do? The man abroad wants to buy $100,000 of your products. He has not got the money. He has a mortage that he can give you or something else which perhaps he can give you. He has got security. You cannot take it over. We have provided, however, a banking system so they can take those securities after investigating them, issuing on those securities bonds and debentures to the American public, giving you your cash. Off go the goods, and we are doing business all the time.

CHARLES M. SCHWAB.

RATE OF EXCHANGE NOW PROHIBITORY.

What else does it do? To-day the rate of exchange, as you all know, if you are at all interested in export business, is absolutely prohibitory. In France they have to pay two to one. A franc worth 20 cents is ten cents. In England a pound sterling was never so low as in the last month or six weeks. They have to pay 25 per cent off the normal. Don't live in a fool's paradise. They are buying now simply the goods they have to have. They won't pay any such tremendous premium as the present rate of interest makes necessary because they won't have to do it.

We have simply got to arrange over here so that we can equalize trade balances or credit balances in order that the rate of exchange will naturally decrease, so that normal times, at least comparatively, can come back in the near future. And when we establish these banks and take these securities from abroad and bring them over here and send the goods over, then we are gradually building up—just the same as imports would build up—so that the trade credit balances gradually equalize and the rate of exchange automatically goes down. That is one of the natural advantages of dealing in foreign securities.

THREE WAYS TO EQUALIZE EXCHANGE.

There are only three ways that I ever heard about by which you can equalize exchange or trade conditions; one is by the importation of goods, another is by the importation of gold, and the other is by purchasing securities. We are now trying to arrange so that we can purchase their securities—they haven't any gold to speak of. Imports we want as we want them, but the main thing is to buy their securities and to send our goods over and for the American business man to make a profit on the goods and to use Mr. Schwab's merchant marine as a practical proposition, rather than simply a sentiment.

The Government now has provided the way and the method. And I believe that in the countries abroad, if the Government will continue to cooperate and hold business, rather than to run business—we can retain the position that the world apparently is ready to accord to us.

IMPORTANCE OF PEACE TREATY RATIFICATION.

Touching with approval upon the recent activities of the Department of Justice in dealing with some of the diseases now infecting the country, and offering "Export, Import and Deport" as a timely text for the nation, he passed on to the need of ratifying the peace treaty:

Speaking personally, I hope that Congress expeditiously, and without unnecessary partisan rancor or playing for position, gets clear of the peace treaty and ratifies it. As a Republican I have stood, however, and will continue to stand, for the following position: when the Constitution was adopted—we had nothing to do with it—it charged and delegated to the United States Senate certain responsibilities. It is not empty; it means something or we should abdicate our position. I believe and stand for very positively—as I hope my record has testified—that we must protect beyond any question of future doubt the independence and sovereignty of our own country. But in doing that—and that can be done very easily—we should not evade any responsibility in times of peace as we have not evaded any in times of war.

WOULD END BUSINESS HESITATION.

I think much of this business hesitation will be behind us and men will go forward with a determination and an energy that has been just a little lacking in the last twelve months because of uncertainty as to what would happen in Washington. I believe it will go forward with renewed vigor, and perhaps the vacation of a year won't be so bad for us after all, if Congress will decide, if the Senate will ratify the treaty, properly reserved, so that there can be no question of the honor and integrity of our country when it comes to future crises or future decisions to make; that they will dispose of it, and thus send the message out to the industrial section of the country, which means practically all parts of the country; that then it is up to the business men of the country to get busy.

National prosperity depends absolutely on national contentment. National contentment depends to a great extent on employment, and employment, of course, depends to a great extent on the demand for production. You can't increase production unless you have the market. You can't increase production if you narrow the market. That is the reason I am so interested in the exportations, the development of exportations.

FOREIGN CREDITS THROUGH TRADE PROFITS.

We loaned nine billions of dollars during the time of war abroad, and we should have loaned it. We now are not even getting our interest. Perhaps we will. I hope so. I am forgetting it. But we are asked to extend more credit. Isn't it better to develop our own export business and send the goods abroad and make a profit on them, than to receive more money only by taxation? That is the only way we can raise it—in order to lend it abroad. In one way we tax you to lend the money. In the other way you make a profit and we do business. That is the difference between the two systems. I hope Congress recognizes that, and I believe they will. I do not want to be too critical of Congress. They have great responsibilities facing them to-day in the relationship between Congress and the business of the country. We ask for your cooperation, we ask for your advice, and above all, we ask for your confidence.

MR. SCHWAB'S ADDRESS.

In presenting the chairman of the board, Bethlehem Steel Corp., New York, who spoke on the tendencies and the future of American industry, its opportunities, needs and duties, the toastmaster very aptly and eloquently introduced him in these words:

A general of industry, who rose from the ranks; an exponent of the square deal for labor, capital and the republic; a notable example of the opportunity that America offers to those of her citizens who use and develop the gifts that God has given them; a dreamer of great things, but not visionary; a leader of men,

not a driver; a type of the men who have made the foundation of our country in the past and embody our hope for the future; a typical American; the Theodore Roosevelt of our industry, Charles M. Schwab.

Mr. Schwab spoke in part as follows:

ECONOMY FUNDAMENTAL TO EVERY INDUSTRY.

When I thought of what I might say to this body of gentlemen engaged in the rubber industry, the thought came back to me that, after all, the fundamentals of all industry are alike. Industry is founded for permanent success upon one great condition, and that is economy. I wonder how many of you think of that point? Years ago, as a younger man, and perhaps more ambitious, I used to go to Mr. Carnegie, as president of his company, with the proud statement that we had made four, five or six hundred thousand. Wise old gentleman that he was, he would shake his head, saying, "That interests me not, but show me how cheaply and how well you made it."

Because the conditions of business may make a great profit for you even though the business is badly conducted. But let the economy of production and its distribution be right and the country for all time shares the success of her industry.

LIEUT.-GENERAL ROBERT L. BULLARD.

ENCOURAGEMENT OF LABOR ESSENTIAL.

Now, gentlemen, what was applicable to that great company is applicable to this great country to-day. It is true that we must take measures suited to the times to aid and help industry. But the one thing that will stand us always to the good is to say of our industries that no matter what the conditions or times, or what is the condition of trade here, our industry will be permanently established for this country and for the world.

Now, what does economy mean? I wonder if you have ever analyzed it? There is nothing that lends value to any manufactured article but labor You may say that in the manufacture of tires or in the manufacture of steel, labor is but 20 or 25 per cent of the cost, but you go back to the man who finds the rubber on the rivers of Brazil, or the man who digs the iron ore in the fields of Minnesota, or the railroads that carry the ore to the places of manufacture, and all of these agencies that carry things to the final crucible of manufacture, and all of it is nothing more than labor. There is no real cost in a manufactured article but labor. Now then, what is the question that will enable us to become permanently the best interested in economy? It is the management and the disposition and the encouragement of labor. We manufacturers of this country have been great autocrats in the years gone by so far as labor is concerned. Labor has not had its fair share of the prosperity of this great and glorious country of ours. And it is a thought that must be borne home as we stop and listen and realize that a man is a man no matter what his position in life as long as he does his duty honestly and conscientiously and for the good of his country and his fellow-men.

LAWS NEEDED TO PROMOTE SHIPPING.

Replying to Senator Edge's remarks regarding America's hastily built fleet of merchant ships, Mr. Schwab said:

I want to say a word about this great merchant marine that our distinguished senator has spoken about. I want to tell you what my thoughts about it are. This merchant marine that has been built by the United States, true to the traditions of the United States, and that he has so eloquently described, has cost about three or four times what any merchant marine ought to have cost, but we have got to charge it all off as an incident of the war and start in afresh again.

Now, you can dot the seas of the world with the merchant ships of the United States and you won't have a merchant marine without the soul and inspiration and the capital of the American business men to make it go. The merchant marine will be of value to every manufacturer and every citizen of the United States. And if laws of the United States cannot be passed to make private capital profitable in business—in the shipping business—then the whole people of the United States in some manner ought to share the burden for the benefit of the United States. The Senate and the Congress shy at the word "subsidy." Well, call it by any other name, but as matters now stand the United States will never have a merchant marine worthy of the name merchant marine, or of the slightest value to this country unless some method of legislation is passed that will enable private capital and private enterprise to reap the profits and reap the benefit from the operation of its merchant ships.

This is the time when it is popular to decry capital. It is a great mistake, if the initiative and energy of the American business man is not allowed to have his reward for that development of industry. We may be called a material nation because we have not developed the arts and the sciences as the older nations of Europe have. I am proud of the fact that I am a citizen of a so-called material nation. Artists, painters, great soldiers, great generals and great admirals may like their names perpetuated in monuments and arches of marble and granite; for me, I shall be proudest if long rows of smoking stacks and flaming furnaces shall mark one step forward in the progress of industry.

BUSINESS AND LIVING ECONOMY NECESSARY.

Fundamentally, we must learn economy, not only in our business, but in our every act. We are living, to use a vulgar expression throughout the whole country to-day, like "drunken sailors," practicing extravagances such as have never been known in any time. Gentlemen we will reap the reward of that expenditure in the years to come by paying the penalty for the dance that we have had to-day. There is no good in preaching that we must practice economy. It will have no effect. It must be brought about by the stern necessities that will make us get down to the basis of living and acting economy that will bring us to a true manufacturing basis in this country. What a false position many men have in life who think that the acquisition of riches and the display of riches marks them as factors in men's affairs! The day has gone by when they will mark the man of benefit to his country and his fellow-men in that way. We must learn to live the simple life.

A GREAT CRISIS WOULD BE BENEFICIAL.

My friends, do not aspire to anything but successful conduct of that which you have undertaken. Accept the assurance of a man who has seen many phases of life. There is nothing worth while but the contemplation of successful accomplishment of the purpose for which you set out to do. Build up industries and make them successful. Make this great nation of ours stand permanently in the position which she has won in this great war. The Almighty has endowed us with natural resources second to no other nation in the world and above all with the people so imbued with patriotism, integrity and energetic ambition as to insure our success as the leader of nations for all time to come. Let us do our part. I believe that we will get to a true basis of economy only after some great crisis that may come upon us to make us realize what the true basis of economy is. The best man in business and in life is the man who has had to go through some crisis before he becomes truly and permanently grounded and fixed in the future success of his life, and what is true of men will be true of nations. We will go through it, and it is so well illustrated by the material on which your industry is founded, rubber; its chief characteristic is its elasticity. You can stretch it ten or twelve fold and it will come back to its original form, and so this great nation of ours; you may stretch it to its breaking point; you may stretch it ten to twelve fold, but the energy of its people will bring it back to the original

form that the Creator of all nations has destined that we shall occupy.

AMERICAN INDUSTRY TO PROSPER.

In concluding I want to draw one optimistic word, and that is, in my opinion, that whatever the crisis may be, it will be but temporary.

The industry of this country will go onward and upward for years to come, and in no industry do I think there will be such marked progress as the industry in which you gentlemen here are to-day engaged.

Feel optimistic, think optimistic, be optimistic, practice Christian Science in business and you will have the success that you merit. Treat your labor well. Make them partners with you. Allow them to have representation amongst their own forces. Do not permit the agitator from Kamchatka to tell you what to do with your labor in Worcester, Massachusetts. Do these things. Be fair. Treat all well. Then happiness and prosperity in your business is sure to follow.

GENERAL BULLARD'S ADDRESS.

Stating that to the surprise of the American people the war had shown that the officers in the United States army were not only educated men and fighters brave and chivalrous, but executives of able administrative capacity as well, the toastmaster sketched briefly their remarkable accomplishment of putting an effective army of enormous size into the field in record time, and introduced Lieutenant-General Robert L. Bullard, Commanding Officer, Department of the East, Governor's Island, as an exponent of the sort of ability which had made it possible.

General Bullard is a past master in the art of telling stories, and his brief address consisted largely of pertinent ones. Alluding to Mr. Schwab's remarks on industrial relations, and drawing a parallel from his own army experience, he said:

As your organization grows, you gentlemen are going to lose touch with humanity unless you take pains individually to preserve it. You have had very graphically pointed out to you the only way by which you can succeed and maintain your standards and the American standards, and that is by maintaining your relations with the men who are working under you. Gentlemen, when your organization grows, be prepared to pass the spark of humanity down to the last workman under you. Otherwise you have not got them. They will go from you.

MEMBERS AND GUESTS PRESENT.

AT THE PRESIDENT'S TABLE.

Bessell, Col. William,
Bourn, Hon. A. O.,
Broughton, John S.,
Brown, A. H.,
Bullard, Lt.-Gen. Robert L.,
Colt, Col. Samuel P.,
Cox, William C.,
Davol, Charles J.,
De Lisser, Horace,
Dunn, Harry T.,
Edge, Hon. Walter E.,
Firestone, H. S.,
Greene, Lt-Col. R. W.,
Hodgman, Geo. B.,
Lewis, Seneca G.,
Litchfield, P. W.,
Lowman, John S.,
McLaughlin, C. W.,
Maguire, John W.,
Morgan, John,
Rutherford, W. O.,
Sawyer, Homer E.,
Schwab, Charles M.,
Thornton, A. D.,
Wilson, Charles T.

ALPHABETICAL LIST.

A

Abbott, M. R.,
Abercrombie, J.,
Abraham, C. D.,
Adams, H. J.,
Agar, John L.,
Ahlstrom, Carl,
Ake, M. E.,
Allen, J. A.,
Altschuler, A. A.,
Anderson, E. A.,
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Voorhees, John J.,
Voorhees, John J., Jr.,
Vorhis, Harry S.,

W

Wadbrook, E. E.,
Wagner, Fred,
Wallace, W. B.,
Walsh, Thomas F.,
Walsh, W. C.,
Wanning, F. D.,
Ward, J. H.,
Warner, L. C.,
Warren, A. W.,
Warren, F. A.,
Warren, Harold D.,
Watson, C.,
Watson, John J., Jr.,
Waterman, C. H. T.,
Watts, L. A.,
Weaver, O. L.,
Weber, E. G.,
Weber, Edward,
Weber, Henry C.,
Weber, L. E.,
Webster, A. M.,
Webster, Ed. C.,
Webster, Stuart,
Weddell, J. R.,
Weeks, P. S.,
Weida, H.,
Weigel, Col. W.,
Weitling, W. W.,
Weller, Charles,
Wells, Collin,
Wesley, P. R.,
Weston, Joseph C.,
Westren, J.,
Wetsel, C. R.,
Whalin, Nicholas,
Wheeler, S. M.,
Wherry, H. P.,
White, A. K.,
White, C. M.,
White, Wm. T.,
Whitehead, R. R.,
Whiting, W. W.,
Whitman, R. P.,
Whittaker, William,
Wiegand, W. B.,
Wilkinson, C. A.,
Willennar, W. H.,
Williams, A. W.,
William, C. L.,
Williams, E. S.,
William, F. B.,
Williams, F. L.,
Williams, O. H.,
Williams, Howard H.,
Williamson, C. B.,
Williamson, H. L.,
Willis, R. S.,
Wilson, Harvey,
Wilson, C. Dudley,
Wilson, E. B.,
Wilson, Edgar Hunt,
Wilson, F. R.,
Wilson, J. Alex.,
Wilson, R. S.,
Wilson, W. E.,
Wise, W. B.,
Wisell, W. D.,
Withstandley, V.,
Wolff, George F.,
Wood, Charles E.,
Wood, Le Roy,
Wood, Theodore,
Woodard, H. J.,
Woodard, S. P.,
Woodbury, Ralph B.,
Worthington, H. D.,

Y

Young, Charles T.,
Young, J.,
Young, P. E.,
Young, W. I.,
Young, Mr.,
Yule, G. G.,

Z

Zimmerman, H. J.,

Annual Meeting of The Rubber Association of America.

THE FIFTH ANNUAL MEETING (under the present charter) of The Rubber Association of America, Inc., was held at the Waldorf-Astoria, New York City, on the afternoon of January 5, 1920.

President Homer E. Sawyer presided. The session was a short one, such formalities as the reading of the call and the minutes of the last meeting, etc., being dispensed with, upon motion from the floor.

There were distributed a printed report of the general manager and secretary, and the financial statement prepared by the treasurer covering the year 1919.

PRESIDENT SAWYER'S REPORT.

In making his report Mr. Sawyer spoke in part as follows:

The principal activity of your president, at least during the past year, has been the endeavor to organize the Association along lines which it quickly became apparent, this year, were necessary. Prior to the war, as we all knew, we were largely a social body, and we had good times, but we did not conduct, between the good times, much business. Our annual banquet and our annual outing were the principal features of the year and in between times we simply attended to our own business and paid little attention to the business of the Association.

CONTINUITY NEEDED IN ASSOCIATION ACTIVITIES.

During the war, under the administration of Mr. Firestone and Mr. Work, everybody worked, and it did not become apparent that the Association as an association was not organized to carry on the regular work of the Association. We have had associated with us, fortunately, as the head of our Traffic Committee our Mr. Viles, and nothwithstanding the fact that the United States Government tried very hard to steal him from us, we finally succeeded, on the first of July last, in installing Mr. Viles, as not only secretary, but general manager of the Association. Since that time I do not hesitate to say that he has done all the president's work. Seriously, however, it was essential that we should so organize as to have continuity in the work of the Association for the future. That there has been some real work done, I know is known to many of you individually. I feel sure that many of you have individually received help and benefit from Mr. Viles' organization. That will be the aim of the Association to provide more efficiently for in the future.

COMMITTEES DOING VALUABLE WORK.

It may be, that in the individual committees there is a feeling that we do not accomplish enough in those divisional committees. I am inclined to think sometimes, however, that the things that some of us would like to accomplish in those divisional committees, the authorities in Washington would frown upon somewhat; and secondly, many things which might be very good for us, from our standpoint, cannot properly be done or undertaken.

The greatest committee, the committee having the largest problem, is naturally the Pneumatic Tire and Truck Division, so ably presided over by Mr. Stadelman and by Mr. Broadwell as vice-chairman. They have done splendid work throughout the year. Aside from the divisional committees there are committees of general character like your Traffic Committee, your Legislative Committee, your Statistical Committee and Industrial Relations Committee. If they alone were all that we could expect from the Rubber Association they would, I believe, warrant all of your support, both moral and financial.

Mr. Viles will a little later speak more specifically regarding his report, and I know that you will excuse the Chair if he closes his remarks simply with a strong plea for your hearty cooperation with your board of directors and with your officers and with your general manager in the coming year.

GENERAL MANAGER VILES' REMARKS.

Amplifying his printed report, Mr. Viles outlined the contemplated work of the Association more in detail, emphasizing the importance of cooperation on the part of members. Said he:

PROMPT OPINIONS FROM MEMBERS HELPFUL

Every communication that is sent out from the Association offices we believe to be of some importance, perhaps not of so great importance to some branch of the industry, but yet of some importance to individual members; and I would like to say it would be very helpful in connection with all communications particularly asking for an expression of opinion to receive a reply from every member. It hampers the work of the divisions to a great extent in the failure to receive, without four or five written letters being sent, replies giving the members' views on various questions of importance.

MOTOR VEHICLE CONFERENCE ON PROPOSED LEGISLATION.

Now, we formed in connection with the Tire Division a motor vehicle conference. That conference is composed of representatives of six associations: The National Automobile Chamber of Commerce, The Motor and Accessories Association, the Three A's, the Trailers, The National Auto Dealers' Association, and the Rubber Association, who have made a contract with the Law Reporting Co. for a report of all legislation that is proposed in each State Legislature throughout the year, that report to be made to the Motor Vehicle Conference immediately after the bill has been printed or typewritten in the various Capitols. Now it is proposed, in that way, to keep an absolute check, and to be in a position to shape policies with respect to all legislation in respect to the automotive industry; and any of the individual members located in the various states can greatly help that service, if they know of any local situation or any municipal situation, or county situation which they believe the weight of the division can help them correct; or if they believe that the Conference Committee's records or the counsel can be of any use to them. So I ask you to give special consideration during the year to any matter coming from the Motor Vehicle Conference through the Tire Division with respect to legislation.

IMPORTANCE OF QUESTIONNAIRES.

Now, you will find a reference here, in the general remarks right next to the last page, to the questionnaire situation. I presume the term "questionnaire" is like castor oil and a lot of other things that have a bad taste to some; but I feel that there is a little misunderstanding, and, perhaps, a little lack of appreciation for the necessity for that sort of thing at this time. The form of the questionnaire has been given a great deal of attention by our Statistical Committee. They believe that the industry not only wants to know its condition in so far as the figures will reflect its condition, but they also feel that in legislative work which is now before us, and the legislation that will come up in the various states and in the coming legislation, that those figures are going to be extremely valuable from a defensive standpoint and if the necessity for them arises, that is, for their immediate use, arises, they are worth 100 per cent more, if we have them right on tap. I feel that for our activities in Washington alone, for the next few years, these statistics are going to be very valuable.

WILL HELP SOLVE TRANSPORTATION PROBLEMS.

In your transportation work, you are facing the most chaotic situation that this country has ever known. I do not feel that the transportation managers of Washington know where they are coming out of the thing. A United States Senator remarked to me a short time ago that there are 98 Senators, and that they have 98 different ideas as to how these railroads are going to be handled, and I think you are going to have 98,000 different propositions with respect to how adjustments should be made and operating service maintained and as to the various other questions that come up within the next two or three years; and you will have situations respecting our industrial work, you will need every ounce of energy, and every bit of cooperation that the Traffic Committee can give; and their work will be augmented to a very large extent if we have the statistics from the questionnaires, so that we can come before any railroad committee or any legislative committee or body acting on railroad matters, with facts, show our position and support it, and get a reasonable measure of justice. I feel that the questionnaire is a vital thing and should have the support of everybody. I do not think that many of you realize what these figures mean when they are all put together, and I further think that a great deal more can be done with them.

TRAFFIC BUREAU READY TO ASSIST MEMBERS.

The Traffic Committee during the year has increased to a committee of 22, starting with only four a little over a year and

a half ago. It represents all parts of the country in which the industry is located, small and large companies and the various branches of the industry. It has performed some very good service; it has saved some very large sums of money and we hope during the year that all managers on transportation problems will keep in touch with the committee, whether small or large or local or individual companies. We are always glad to help. We have organized a very high-class tariff bureau in our office, putting it in position to quote rates and prices regarding service, information regarding claims, and anything of that nature, and we have a man there whom we can send out. If any of you managers want to start a department of your own or want assistance in that department, we have the advice and the information to furnish the basis of an organization and we would be very glad to extend the service to all members of the Association.

MORE INTEREST IN SECURING NEW MEMBERSHIPS.

One other thing I noticed, that we are receiving quite a few applications for membership from comparatively new companies, and our friends the importers are very active in securing these applications. I think they are to be congratulated on their interest in the Association. I would like to see the same or more interest in securing new memberships throughout the Association on the part of the manufacturers. Most of you, perhaps, have some neighbors who may not be members of the Association. Try to find out whether they are or not and bring them to church along with the others.

INDUSTRIAL RELATIONS COMMITTEE ORGANIZATION.

In response to a question by Mr. Hodgman, Mr. Viles explained the plans of the Industrial Relations Committee more in detail. His remarks in this connection follow:

You will find in the report, gentlemen, a reference to the Industrial Relations Committee that has just been formed. Now, that committee is organized somewhat along the lines of the Traffic Committee with an executive committee of ten; and the Executive Committee of the Association has authorized an increase of that committee to 25 so we will have an executive committee of ten and a general committee of fifteen, making a total of 25 people. The committee has been selected with due regard to territorial representation and the size of the various companies, and to the various branches of the work, and we believe it is going to be very successful. The primary purpose is this:

PURPOSE OF THE COMMITTEE.

That the labor situation is entirely different than it was in what we might term normal times. It is not believed by many, large numbers of our people, manufacturers, that the country will ever get back to the labor conditions of the past. Labor has taken a new stand for better conditions; they have new viewpoints in a conception of their own rights and duties, and the manufacturer has necessarily, even if he would not—there not having been time to attempt to form a policy—he has had to meet the situation. And we think that the Industrial Relations Committee, having analyzed the various methods used in selecting the employes and deciding as to employes' privileges and the conditions under which they shall work; in fact, the whole employment relation, by an analysis of the various methods used by all members, can select from that mass of information, the best points to all of them and assemble them into one composite system and put them out for your consideration. That is one thing.

PLAN OF ACTION.

We purpose to keep in touch, through a service somewhat similar to that of our Tire Division, with all proposed labor legislation and it is to be given to you as a matter of information. The Industrial Relations Committee would be glad to receive expressions regarding, we might say, suggestions of all kinds; in fact, at each meeting we will prepare a docket and all members of the Association will be asked to suggest subjects which this committee can consider, such information as they can gather or suggestions which they can make to them. There is nothing in their work of a paternalistic nature, nor will they tell you you must do something, nor will they ask you to do anything in any peremptory way; they will simply go to you as a matter of getting or giving advice. And this advice we hope will be of great benefit to you.

INDUSTRIAL RELATIONS NEED MORE ATTENTION.

Touching upon the intention of the Board of Directors to enlarge the various committees in order to ensure wider territorial representation and to embrace large, medium and small manufacturers, the president further emphasized the need of devoting more attention to the matter of better industrial relations:

We all agree that not only is there the necessity of more attention to the question of industrial relations, but we want to give a greater attention to it. The day, we believe, has gone by when we can simply flatter ourselves that our own house is in order, and that, consequently, we are safe. Some of us, instead of using the words "Capital and Labor" have chosen to use the words "Management and Employes." And certainly I feel that management and employes must establish much more intimate points of contact in the future than in the past. And as I said a moment ago it is not sufficient for us to smugly assume that our industrial relations are good with our employes, because the disease or a contagion of bad relations between management and employe in our immediate vicinity, even if it is not in connection with our own industry, can easily spread into our own better managed companies to the detriment of our companies. I do not think there is anything that business men or public spirited men in any walk of life can turn their attention to with a greater sincerity of purpose and open mindedness and a real heartiness than to try to improve industrial relations conditions in this country of ours. Some of the larger companies have selected during the past three or four years specialists in that line of work. Some of the smaller companies have already done so, and as fast as the Association finds that any company has a specialist in that line that has something helpful to bring to their gathering, he may be sure he will be asked to come along with his ideas and his suggestions.

ELECTION OF NEW DIRECTORS.

The names of the gentlemen placed before the membership by the Nominating Committee for election as directors, for three years from January, 1920, were, upon motion from the floor, presented for a vote and the nominees were unanimously elected. Their names follow: A. H. Brown, J. S. Broughton, J. W. Maguire, W. O. Rutherford and H. E. Sawyer.

Formal action was taken, requesting the Board of Directors to continue the work undertaken and in contemplation in connection with the gathering of statistics through the medium of questionnaires, as the opinion was expressed that the work is valuable and its results would prove of much service in the future.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS.

Suggested amendments to the Constitution and By-laws were formally adopted, the intent of which is stated in the following:

First: The providing of more definite and specific conditions under which firms, corporations or individuals, not directly engaged in the rubber industry may participate in the activities of The Rubber Association of America, Inc. The suggested amendments include certain limitation of voting power and different annual membership dues. They also provide that those firms, corporations or individuals not directly engaged in the rubber industry, which are now members of the Association, shall automatically upon the adoption of the suggested amendments become affiliated members.

Second: Specific provision to the effect that membership in the Rubber Association is not transferable from one firm, corporation or individual to another under any conditions.

Third: Specific provision to the effect that membership in the Association will be for the calender year instead of for a year from the first of the month following election.

ELECTION OF OFFICERS.

Immediately following the general meeting, the Board of Directors met and the officers of the Association during the year 1920 were unanimously reelected to serve during 1920 as follows: President, Homer E. Sawyer; first vice-president, Harry T. Dunn; second vice president, F. A. Seiberling; general manager and secretary, A. L. Viles; treasurer, W. C. Cox.

W. J. Kelly and J. S. Broughton were elected to serve on the Executive Committee for the coming year and the Board appointed a Legislative Committee to consist of General Counsel, Charles Neave, F. C. Van Cleef and Ernest Hopkinson, but the appointment of the remaining standing committees of the Association was referred to the Executive Committee with power to act.

Officials and Directors of Rubber Association of America, 1920.

J. S. Lowman.

J. S. Broughton.

S. G. Lewis.

J. Morgan.

W. O. Rutherford.

Harry T. Dunn.
First Vice-President.

Homer E. Sawyer.
President.

Frank A. Seiberling.
Second Vice-President.

J. A. Maguire.

A. L. Viles.
General Manager and Secretary.

William C. Cox.
Treasurer.

(*Underwood & Underwood, N. Y.*)
W. J. Kelly.

J. N. Gunn.

A. D. Thornton.

(*Underwood & Underwood, N. Y.*)
C. W. MacLaughlin.

C. J. Davol.

Portrait of A. H. Brown, a director, not available.

REPORT OF THE GENERAL MANAGER AND SECRETARY.

The change in the management of The Rubber Association of America, brought about by the creation of the dual position of general manager and secretary on July 1, 1919, presented many difficulties with respect to the preparation of the Annual Year Book, particularly because of the general manager's lack of personal connection with or knowledge of the War Service Committee just prior to its dissolution and the reconstruction plans undertaken following that event. Also the labor troubles which paralyzed the printing industry in New York City were of such a protracted nature that it was concluded that the publication of the Year Book was decidedly impracticable.

For these reasons a large 8-page printed report of the general manager and secretary was distributed to all Association members in lieu of the Year Book, which will probably be issued not later than three months following the annual meeting. The printed report is a welcome innovation, giving as it does a summary of the Association work for the year 1919, as it has been detailed monthly in THE INDIA RUBBER WORLD, presenting a comprehensive view of the work of the various divisions and committees, outlining somewhat the plan of action for the present year, and emphasizing the need of co-operation on the part of members to make it a success.

DIVISIONS' MEETINGS.

MEETINGS of the following divisions were held on January 5, 6 and 7, 1920, and officers elected for the ensuing year:

BOOTS AND SHOES DIVISION.—The Boots and Shoes Division met at the Union League Club for lunch on Monday, January 5, and the business of particular interest was the adoption of by-laws and the change of the name of the division from "Boots and Shoes Division" to "Footwear Division."

FOREIGN TRADE DIVISION.—The Foreign Trade Division held its meeting at the Yale Club, January 5, seventeen companies being represented, and officers and an executive committee were elected as follows: chairman, A. R. Gormully, Ajax Rubber Co., Inc.; vice-chairman, A. W. Magee, Kelly-Springfield Tire Co.; G. C. Chalmers, Hodgman Rubber Co.; R. H. Daniels, The Goodyear Tire & Rubber Co.; A. A. Garthwaite, Lee Rubber & Tire Corporation; A. S. Hardy, Manhattan Rubber Mfg. Co.; E. H. Huxley, United States Rubber Export Co., Ltd.

It was determined that the Executive Committee would hold regular monthly meetings at the offices of the Association.

A sub-committee was appointed to confer with the Federal Trade Commission at Washington regarding the interpretation of the Webb-Pomerene Act and to present facts and arguments, if necessary, in support of the views of the Foreign Trade Division respecting the needs of the rubber industry in this connection.

MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION.—This division met at the Yale Club January 5. John J. Voorhees, Sr., was unanimously reelected chairman of the division and C. E. Cook was elected vice-chairman.

A departure from the previous organization plan was determined upon to the extent of having four vice-chairmen, one for each of the districts in which the manufacture of mechanical rubber goods is somewhat centralized, i.e., New York, New England, New Jersey and the Middle West. The election of the three other vice-chairmen, however, was referred to the Executive Committee with power, following the amendment of the by-laws of the division, to provide therefor.

RUBBER PROOFERS' DIVISION.—The Rubber Proofers' Division met also at the Yale Club, January 5. The following were elected to office and to membership on the Executive Committee: chairman, Dr. L. C. Himebaugh; vice-chairman, Warren McPherson; Executive Committee: chairman, Dr. L. C. Himebaugh; vice-chairman, Warren MacPherson; J. J. Clifford, Frank Post, J. T. Callahan.

The Publicity Committee to act during the year was appointed, consisting of James Meade, W. E. Cavanagh and W. Keyes.

Certain routine matters, particularly in connection with the uniform contract which is being developed by the division, were handled.

RECLAIMERS' DIVISION.—The Reclaimers' Divison met at the Yale Club, January 5, and the officers and members of the Executive Committee who served during the year were unanimously reelected as follows: chairman, E. H. Appleton; vice-chairman, Clark W. Harrison; Executive Committee: E. A. Andersen, John S. Clapp, R. A. Low, J. S. Lowman, Joseph F. McLean.

The Technical Committee, as constituted for the year 1919, with the exception of Dr. L. E. Weber, exofficio member, was reappointed as follows: Chairman, L. J. Plumb, W. B. Pratt, C. J. Howell, T. E. Furness, Joseph E. Russell.

Certain details in connection with the specifications for the standards and packing of scrap rubber, which are promulgated by the Division, were given attention.

RUBBER CLOTHING MANUFACTURERS' DIVISION.—This Division met on Tuesday, January 6, in the office of the Rubber Association, and officers and an executive committee for the year 1920 were elected as follows: chairman, N. Lincoln Greene; vice-chairman, A. W. Warren; Executive Committee: N. Lincoln Greene, A. W. Warren, C. Kenyon, W. M. Tenney, G. H. Rockwell, J. T. Callahan.

A number of subjects involving matters of a routine nature were given attention.

RUBBER SUNDRIES MANUFACTURERS' DIVISION.—The Executive Committee of this division met at the Union League Club for dinner on the evening of Tuesday, January 6, and the Division met at a general meeting for lunch at noon on the following day. C. J. Davol and H. A. Bauman, who served during 1919 as chairman and vice-chairman, respectively, were unanimously reelected, and an executive committee, consisting of the following named, was elected: chairman, G. J. Davol; vice-chairman, H. A. Bauman; Executive Committee, W. S. Davison, S. H. Jones, W. H. Balch, E. E. Huber, A. W. Warren.

TIRE MANUFACTURERS' DIVISION.—The Joint Executive Tire Committee met in the Association Rooms, January 7, and gave its attention to several subjects of interest and importance, and then adjourned to attend the general meeting of the Tire Division with luncheon at the Yale Club. There were forty-eight in attendance at this meeting.

Following luncheon the meeting was formally convened with A. G. Partridge, vice-president of the Firestone Tire & Rubber Co., in the chair.

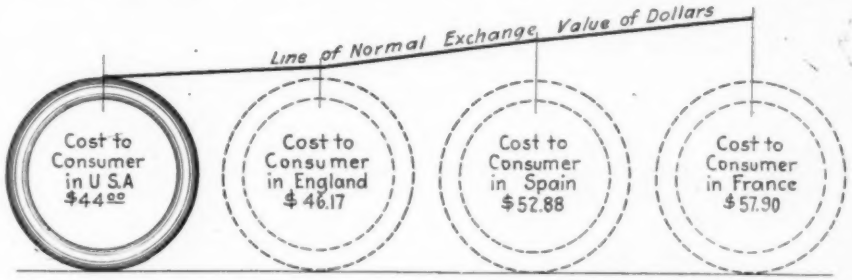
A resolution was passed, dissolving the Solid Tire Manufacturers' Division in order that it might amalgamate with the Pneumatic Tire Manufacturers' Division because of the interests of the two being substantially identical and the membership of the Pneumatic Tire Manufacturers' Division so greatly exceeding that of the Solid Tire Manufacturers' Division. The name of the Pneumatic Tire Manufacturers' Division was changed by resolution to "Tire Manufacturers' Division" and a sub-committee is to redraft the by-laws so as to provide for the interests of all tire manufacturers.

John Kearns, of the Lee Rubber & Tire Co., was elected chairman; Seneca G. Lewis, of the Pennsylvania Rubber Co., was elected vice-chairman. The division has an executive committee of fifteen and the following firms were elected to membership thereon for the year 1920: Ajax Rubber Co., Inc., Empire Tire & Rubber Co., Firestone Tire & Rubber Co., Fisk Rubber Co., The General Rubber Co., The B. F. Goodrich Co., The Goodyear Tire & Rubber Co., Hood Rubber Co., Kelly-Springfield Tire Co., The Miller Rubber Co., Norwark Tire & Rubber Co., The Portage Rubber Co., Swinehart Tire & Rubber Co., United States Rubber Co., Victor Rubber Co.

Influence of Present Exchange Situation on Competitive Position of American Rubber Industry in Foreign Fields.

By L. W. Alwyn-Schmidt.

THE RECENT DECLINE in the exchange upon America has resulted in a considerable disorganization of American foreign trade which has found its principal expression in a general disinclination of American exporters to accept anything but dollars in payment. It is now argued that the present situation if left to continue, is likely to lead to a general breakdown of our export trade, as foreign countries will hardly be inclined to buy American merchandise upon the basis of the present exchange rate as against the high price of the dollar. Exporters of rubber tires and other rubber goods have received many cancellations of foreign orders during the last months and are inclined to attribute this condition exclusively to the exchange situation. They hold that the American rubber industry is in danger of becoming incompetitive in the international field. Several remedies have been proposed; so far, however, no action has been taken, principally because of the lack of a basis upon which a settlement can be obtained.


Line of Normal Exchange Value of Dollars
Cost to Consumer in U.S.A $44.00
Cost to Consumer in England $46.17
Cost to Consumer in Spain $52.88
Cost to Consumer in France $57.90

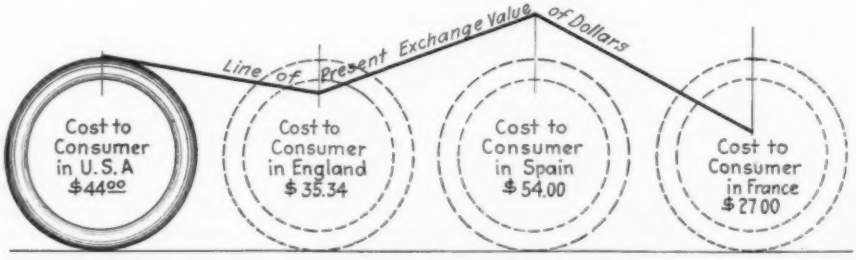
PRICES OF TIRES CORRESPONDING TO THE AMERICAN 34 BY 4½-INCH FABRIC TIRE IN ENGLAND, SPAIN AND FRANCE, WITH UNITED STATES MONEY EQUIVALENT AT NORMAL EXCHANGE RATES.

TIRES AND EXCHANGE RATES.

It will be shown in the following that the situation is by no means as serious as it appears on the surface, and that its disastrous effects upon international trade are not caused by the devaluation of foreign money itself but by the present frequent fluctuations of the market.

The situation most frequently quoted is that of an American manufacturer, say one making tires, negotiating for a tire contract in France or England. Let us assume the tire to be a 34 by 4½-inch fabric tire, of standard make and costing the consumer $44 in the United States. This tire costs to-day in France 300 francs. It costs £9.10 in England, 274 pesetas in Spain, and approximately $37.80 United States currency in South America. Applying normal exchange, the dollar value of this tire would be $57.90 in francs, $46.17 in England, and $52.88, approximately, in Spain. The normal exchange rate of the pound sterling is $4.86, of the franc 19 cents, and of the peseta 19 cents. On the day of writing this article, December 19, the following quotations were made in international dollar exchange: pound sterling $3.72, franc $0.09, peseta $0.191. If purchased in dollars, a tire equivalent to the American one could have been bought in England for $35.34, in France for $27, and in Spain for $54, approximately, owing to a fractional increase of the cost of the peseta over par. On the other hand, the English purchaser of an American tire would have to pay £11.18.—the French 484.88 francs, and the Spanish 270 pesetas, approximately. We have therefore, at the present time at least, the peculiar situation that one and the same tire can be purchased and sold at varying rates in each of these countries owing to the variation of the exchange.

Such a situation can act on the American tire trade in two different ways. It might enable tire importers in this country to purchase for dollars great quantities of tires in England or France and to sell them here at a cost very much below that for which they can be offered by other manufacturers. But it will also deter the French and English purchaser from buying tires in the United States at the practically preventive exchange rates of their respective money units existing just now. Also there is a third consideration: to which country will the world's markets go for supplies in the present situation, to the United States, to France or to England? But the present-day situation is only an incident of the overshadowing problem of international competitive ability of which it forms a part.


Line of Present Exchange Value of Dollars
Cost to Consumer in U.S.A $44.00
Cost to Consumer in England $35.34
Cost to Consumer in Spain $54.00
Cost to Consumer in France $27.00

PRICES OF TIRES CORRESPONDING TO THE AMERICAN 34 BY 4½-INCH FABRIC TIRE IN ENGLAND, SPAIN AND FRANCE, WITH UNITED STATES MONEY EQUIVALENT AT PRESENT EXCHANGE RATES.

COMPETITION IN PRODUCTION.

The exceptional demand for rubber goods from domestic and foreign markets during the last years has put out of operation the ordinary rules of competition that govern the world's market in normal times. Goods were needed urgently and cost was no consideration. Under these conditions there was no difficulty for any manufacturer to sell at his own prices. It was a typical sellers' market with no string to it in any respect. But the conditions must change again, in fact they have already changed. The world's business can not be conducted permanently on a war basis, and after a while the rules of ordinary competition will return. The United States rubber industry will then find very strong competition from unexpected quarters. We know little yet about the actual conditions in Europe. The European rubber industry has operated during the war under high pressure. Rubber has generally come more into prominence, and the experience and knowledge of the war applied to modern manufacturing

should give very effective support to the European rubber industry.

Competitive production is not only a matter of manufacturing method; it goes right down to the very roots of the industry. The ability to compete springs from the volume of the original investment, of the productive capacity and cost of labor and from the effectiveness of the equipment. It depends upon the price of the raw material and the overhead expenses of the industry. We can, therefore, easily concede points to Europe for new inventions and improvements in the method of the industry if we can only meet competition as to the cost of labor, materials and the general operation of our plants.

If it should prove that we pay more for our raw materials, that our labor costs us more than it costs the European manufacturer and that our overhead expenses are higher, then we may very well experience a severe set-back in the prospects of our industry. Europe will not only take away from us our recently gained export markets but it also may attack us in the domestic market.

CRUDE RUBBER AND FOREIGN EXCHANGE.

There is little reason to expect that European rubber manufacturers should be able to buy their rubber much cheaper than our own manufacturers. The American rubber manufacturer has bought rubber as cheaply in London as the English in pre-war times and the freight has not made much difference in the cost of the product at the door of the factory. During the war this condition has still more improved as we have discontinued largely the old practice of buying in Europe but have purchased and shipped our requirements at the source. The cost of the raw material, therefore, will not favor in future any side any more than it has in the past, and the chances are even that the scale may dip slightly in our favor.

This chance is supplied by the present exchange situation. As neither France, nor England, nor the United States, is able to produce rubber in their respective countries, they must necessarily buy it somewhere else, in Brazil, Africa, or Singapore, for example. In these markets each of the purchasers appear on his own merits. But the American purchaser, at least at the present time, has the advantage of the greater purchasing power of the dollar. Where the English manufacturer still pays twenty shillings to the pound sterling, the American pays only $3.72 which gives him a superiority of approximately 20 per cent in his purchase.

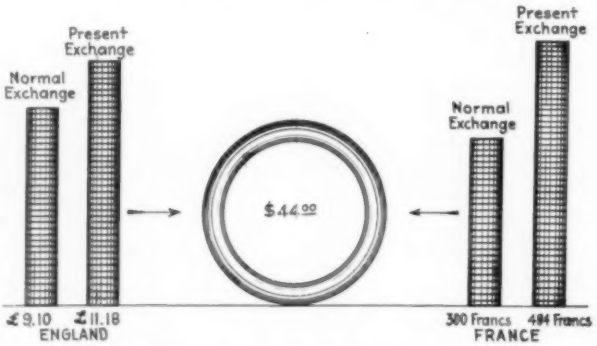
OTHER SUPPLIES.

What applies to the principal product, applies also to the supplementary ones, as the textile fabric in the tires, chemicals, etc. The rise in the cost of many of these has been quite phenomenal. These supplementary supplies are not so narrowly confined to their original sources as rubber. Of course, for the fine cotton required for tire fabrics we rely almost exclusively on Egyptian cotton, as the Sea Island product is not at present available in sufficient quantities. But it appears that we should be able to purchase this cotton as cheaply or expensively as our European competitors. Our position as to chemicals probably is less favorable. England, France, and our other European competitors have manufactured these products generally cheaper than our own factories, and they most likely will continue to do so. It may be said that we can purchase these products from them, and by doing so can share in their advantageous position. But since the war much has changed in our own chemical industry, and it may become a matter of good policy that we should favor rather our national producers instead of the foreign, even if we should have to pay a higher price. After all is said, there remains, however, the fact that matters will remain practically unchanged and that the advantage in buying will remain pretty much where it was before the war.

Conditions are different as to labor. In this respect we have to deal in Europe with three distinct groups of production, each having its special problems of labor, and each being differently affected by the recent reorientation.

LABOR SITUATION.

In England and France little has changed in the outward position of labor. True, it has increased its political control in the first-named country, but the English workingman has always exerted a certain influence upon the industry of the country by



IT IS AN EXPENSIVE MATTER FOR THE PURCHASER TO BUY AN AMERICAN, 34 BY 4½-INCH FABRIC TIRE WITH THE DEPRECIATED MONEY OF ENGLAND AND FRANCE.

way of a very well developed system of trade unions. Conditions are similar in most of the neutral countries and in Italy. In Germany, however, great changes have taken place and are still under way. The German working population is not only taking part now in the management of the political affairs of the nation but it has become the government itself. The change has not been always to the best interest of the industry of that country but the outlook is rather hopeful and in the end a fairly sound system of cooperation between manufacturer and workman may be obtained. Nothing has yet been decided as to the status of labor in the newly created republics east of Germany, such as Poland and Bohemia, while in Russia proper at the present time labor has not only control of the governmental machine but has taken in charge the whole nation. This growth of the political influence of labor has been followed in each instacne by a rise in wages and it is this aspect of the situation which is of most importance for the future competitive position of the European rubber industry.

WAGE INCREASES.

Wage increases have varied a great deal in the different parts of Europe. In England wages have gone up at rates varying between 75 and 100 per cent. Wage increases, however, have been generally more heavy on the European continent because wages were lower there than the average wage scales paid in England. In France, for instance, the rubber industry now pays easily 150 per cent more than it used to pay in pre-war days, and in Germany increases have been as high as 200 per cent and even more. Conditions in Germany are very unsettled and the present wage movement has not come to an end yet, owing to the continual depreciation of the German exchange. We may take it, however, for granted that continental European wages in the rubber industry will settle down finally upon approximately the same level as that prevailing at the present time in England. This will bring about a great change in the competitive situation in Europe.

In pre-war times it was generally acknowledged that the continental European factories were able to out sell the English ones in their own market. As the result there existed in London a great number of European continental agencies selling the product of their respective factories in competition with English manufacturers. During the war, a noticeable reduction in the number of these agencies has taken place and their return in the same strength is not expected. England in fact may be able to hold

very well its own market against foreign competition. But the increase in wages has also changed the competitive position of Europe as a whole in its relation to the non-European markets. The European rubber industry has done an enormous non-European trade in former years, based principally upon its ability to sell at low cost. The European manufacturer had only little in his favor in the purchase of raw materials, his chances to sell cheaply, practically speaking, rested entirely on his possibility of getting his work done at a low wage scale. On the strength of the cheaper European labor the European rubber manufacturer, therefore, was enabled to undersell his American competitor practically wherever they met in the world.

Of course, while European wages have risen, there has also taken place a considerable increase in the wages paid by our rubber manufacturers. The question now is: Have these American wage increases outdistanced the European and have they reestablished in this manner the same difference in the cost of labor in favor of the European rubber manufacturer that existed before the war? American wages in the rubber industry have grown exactly 100 per cent since the summer of 1914. But the chances are that the American wage movement has now reached its highest peak. When the end of the movement has been reached it will most probably show that American wages are still higher than the European wage scale but that the European scale is approaching more closely our own than was the case before the war. Our handicap would no more, therefore, be as extensive as it has been in former years and we might very well aspire to overcome it by making reductions in our overhead expense, a procedure in which we have acquired much experience.

OVERHEAD EXPENSES.

Overhead expenses in the rubber industry are comparatively high. They comprise approximately 25 per cent of the sales price of the ready product at the factory door. Like all other forms of manufacturing expenditure they have grown considerably during the last year in this country but they have still grown more rapidly in Europe. In comparison with the heavy war expenditures of the European countries ours have been small. True, we have lent heavily to our associates in the war but we must assume that these debts will be repaid one day. We also have followed the very wise procedure of clearing up a great mass of expenses by the medium of immediate taxation that will relieve our industry from further heavy increases in this respect after once the present period of high taxation has ended. But while we seem, therefore, to be well placed as far as direct overhead expenses are concerned, it is doubtful whether we can claim the same as regards indirect overhead expenditure. It is up to every rubber factory to correct a faulty expense system and to make economies of one or the other sort. It will in doing so certainly reduce the cost of production and will keep its goods competitive in the international market. But the individual rubber manufacturer has no influence upon the more dangerous form of overhead expenses which derive their origin from national sources. These overhead expenditures, as railroad freights, shipping freights, and others, have to be met by each manufacturer as an unalterable quantity. They affect his business as much as that of his competitor, of course, but their growth or decline upon a national basis is of considerable influence upon the standing of a whole industry when entering international competition. Of this national overhead the rubber industry of the United States has had to carry lately a more than usual burden which has been increased still further by a rather pernicious system of intentional restraint of production.

It is this form of expense increase which is at present the most serious charge upon our national cost of production and which forms a great danger to the competitive position of our rubber industry. We have, therefore, so far established the following facts:

The purchase price of a French or English tire, if bought with American money, has declined.

The purchase price of an American tire, if bought with French or English money, has increased.

The price of an American tire in Europe, therefore, has reached at the present moment a level that renders it incompetitive, while a French or English tire can be sold much cheaper in the United States than an equivalent American tire.

In the language of the economist: a point has been reached where the export of rubber products becomes unprofitable in our market, as its purchasing value for other goods has declined. But this adverse condition must pass very soon. French and English exchanges have declined not only in the direction of the United States. They have also shown a considerable decline in other directions. In these markets the purchasing value of French and English money is lower than that of the dollar which has remained approximately at par. This devolpment has already resulted in a purchasing movement in favor of the two countries for such merchandize as is manufactured exclusively inside England or France. But the lower exchange operates in this instance very heavily against the selling country, as it reduces materially the avaliable funds for exchange purchases. The raw materials bought by either France or England in exchange for industrial products cost these two countries not the price of the normal exchange, but the additional cost caused by loss of exchange.

THE REMEDY.

To meet this situation these countries will have to raise their prices to a point where it becomes profitable to them to sell their merchandise in exchange of the foreign product. This step has been taken already in many instances as indicated by the rapid rise in the cost of many raw materials and manufactures which we import ourselves from the countries in question. The time has come, then, when the real test of comparative competitive ability applies. To which point will England have to raise its tire prices so as to meet the demands of labor, cost of materials, overhead, and essential manufacturing profit? Will this bring the cost of its tires to a level considerably higher than that at which the same tire can be supplied by the United States? The chances are that the weight of the heavy national overhead expenses of Europe and the enormous loss in purchasing power caused by the devaluation of its money will favor the United States producer.

This answers also the present problem. We can not expect European exchange to rectify itself as rapidly as has been the case after other wars. The burden is too great to be borne easily. But a stabilization will be attempted that will remove the principal disadvantage of the present situation—that of the permanent changes in the market quotation of foreign moneys and the general disorganization of all international trading resulting from it. If we know the franc will buy 10 cents worth of our merchandise or of raw materials of other countries, we can sell and buy upon this basis. After a while all trading will readjust itself accordingly and competition will not depend upon the varying chances of the money situation but upon the ability to produce at a competitive price. There will be no handicap and no favor. Under such conditions the American rubber industry should be well able to prosper in its foreign dealings.

AN ITALO-AMERICAN ASSOCIATION FORMED.

A *Unione Italo-Americana* has been formed recently in Rome. It is intended as a center for all Italo-American committees and has several sections—economic, intellectual, art, legislative, publicity. It is supported by financial establishments and business men who wish to foster the commercial and economic relations between the two countries, and seek from the United States in some degree the backing which Italian industries and commerce received from Germany before the war.

The Association is housed in the Palazzo Salviati on the Corso Umberto, and has set up an information office for American business men, a library of American industries, and a general meeting place for business and social purposes.

Cotton Bonanza in the Southwest.

TALES OF THE COTTON CROPS in southern California and Arizona begin to rival those of the early gold discoveries. When the United States went to war every effort was made to induce the planters to increase their acreage in anticipation of a long and protracted struggle, and now the results are beginning to show in the prediction that this year the net yield to the growers in this section will be in the vicinity of $40,000,000.

When it is considered that this addition to the wealth of the country is gained mostly from sections which were formerly considered waste and unprofitable lands the achievement from a financial standpoint seems all the more remarkable. Regions in California previously considered prosperous have been made more so while desert spaces of Arizona have been made to yield from $150 an acre upwards. Families that several months ago were living from hand to mouth and were barely able to rent land on a crop basis are now riding round in automobiles, according to reports from these districts.

Altogether more than 177,800 acres are planted to cotton in southern California and Arizona. In Imperial Valley 67,816 acres are planted on the American side of the line and 60,000 acres are planted on the Mexican side, yielding from half to three-quarters of a bale per acre. Prices for 100,000 bales produced the past year in Imperial Valley are said to have ranged from 35 cents to 55 cents a pound. These record prices, the result of a shortage of cotton throughout the South, have so enthused the valley that the planters are already figuring on a further increase of cotton acreage. As to the grade of the cotton produced, this can best be illustrated by the market reports. When the December delivery in the New Orleans market was quoted at 38 cents a pound, the price of the Imperial Valley product was 53 cents, a premium for quality of 15 cents a pound.

As an illustration of the growth of the industry in Imperial Valley, arrivals of 50 cars a day at Calexico, the cotton center of the valley, are not infrequent. On the first of November the

GIN-YARD AT CALEXICO, CALIFORNIA.

average daily receipts of cars at Calexico and Mexicali is around 15 cars, but this gradually creeps up and the high point is during the month of December. These cars are handled by the Inter-California railroad. A typical day's business last fall was the occasion when forty-nine cars arrived, seventeen of which were from across the line and twelve were consigned to one gin, ten being from this side of the line coming into Calexico and the remaining 22 being direct from Mexicali. A much larger number of carloads were picked in the valley that day, but gins at El Centro, Imperial, Brawley and Holtville took their share. Of the approximately 25 gins in the valley, by far the larger number are located at Calexico and Mexicali.

These two towns are unique, in that they are the only places in the United States where cotton is received in carload lots for ginning. The gins in the South are scattered through the cotton raising section and are more numerous, but the cotton is invariably hauled in wagons from the field to the gins. Ten carloads of seed a day are brought across the line, some of it being compressed in Calexico, but the bulk of it going to oil mills in Los Angeles. Some of it is shipped to Texas, also for compress.

SACKING ARIZONA COTTON.

Imperial Valley cotton seed is always in demand at high prices as oil mill men who buy for its oil content say it is richer in oil than any grown elsewhere in the United States. A large amount is shipped east to points where the crop is poor and is there replanted, even growers in the South recognizing it as superior to any produced in even the best cotton-growing sections.

Pima or Egyptian cotton has come into favor in a few sections of the valley, and it commands a price of from 55 to 85 cents a pound, but it is very difficult to gin properly. The gin at Seeley is said to be the only one adapted to handling this kind of cotton. The variety generally grown is the Durango or medium long staple variety, which made its way several years ago from Mexico where plants were growing along the ancient ditch banks and canal beds. This cotton attained its highest state of maturity in the Imperial Valley and is widely cultivated. Seven thousand acres were planted to Pima or Egyptian long-staple cotton last year, but because of the market, which has not yet become fully developed, the growers experienced difficulty in getting the price they anticipated and the acreage dropped this year to 5,000.

Imperial Valley has been entirely free of labor difficulties the past year. On the American side of the line the pickers have received $2 a hundred, averaging $4 a day and up, and on the Mexican side Chinese laborers who picked the crop averaged $1.40 a hundred. Cotton insect pests are rare, but one, the "leaf miner," being heard of to any extent. The best remedy for this is to plant early and to pick as soon as possible. The insect does not get started until late and does no particular damage if the cotton is handled in this manner.

Palo Verde cotton acreages for the last five years have been: in 1915, 1,700; in 1916, 4,800; in 1917, 7,000; in 1918, 12,700, and this last year 20,000, representing a growth in aggregate crop values each year from a few thousand dollars to over $5,000,000. Crop conditions published in the government reports in November, 1919, including up to October 25, show the average condition of

the cotton crop in the United States to be 51.1 per cent of normal, while Arizona was 89 per cent and California 92.

The cotton situation in Arizona is highly gratifying to growers because of high prices, the comparatively cheap cost of producing and harvesting, and the continued steady demand for the product. Begun a few years ago as an experiment, the acreage has gradually increased until in 1916 there were 20,000 acres in this state devoted to raising this staple. The acreage of 1919 upon which "long staple" was produced was estimated as in excess of 50,000, the return to the growers being figured at between $18,000,000 and $20,000,000. The December cotton reached the extraordinary high figure of 85 cents a pound and producers believe it will go even higher. It is said to exceed in length, texture and fiber the famous Egyptian and Sea Island varieties, and is the kind most in demand in the commercial markets of the world.

It should be remembered that long-staple cotton is the most desirable for fabric and cord for automobile tires. Perhaps one of the greatest advantages that has accrued to Arizona as a result of the cotton crop is the stimulating effect it has had upon land values. Land which two years ago could have been purchased for $25 an acre is now selling for ten times that figure and that for which $150 an acre was the top price now commands $500 an acre. The latter figure is set by present owners on large tracts formerly devoted to raising alfalfa. Good cotton land can be rented for $50 an acre.

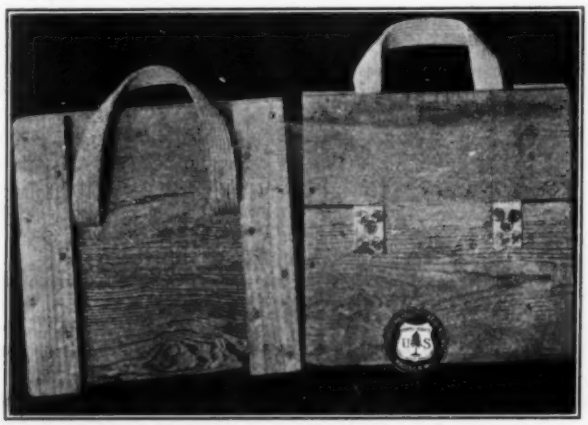
The Southwest Cotton Co., the county farm bureaus and the Federal Department of Farm Industry have combined to help the growers and encourage increased acreages. Every effort is being made by these agencies to propagate new varieties of cotton, to fight against the introduction of the boll weevil and other pests, and to introduce the best kind of machinery.

On the new desert lands the yield has been from ¼ to ½-bale per acre and on developed lands 1 to 1½ bales. Each bale weighs 500 pounds, which, at 85 cents a pound, means each is worth $425. There are no gins in the Salt River Valley for handling short-staple cotton.

RUBBERIZED WEBBING HANDLES FOR BOXES?

As a suggestion, rubber manufacturers may be interested in the box handles of webbing devised by the United States Forest Products Laboratory, Madison, Wisconsin, to eliminate the use of rope handles that take up valuable shipping space.

To obviate these difficulties, a webbing about ⅛-inch thick and 1⅛-inches wide, which has a breaking strength of 800 pounds,



(Forest Products Laboratory.)

METHOD OF ATTACHING WEBBING HANDLES TO BOXES.

is suggested. This may be inserted through saw-cuts made parallel to the grain in the ends of the box, turned down flat inside, and nailed securely with large-headed roofing nails.

Such a handle takes up no extra space either inside or outside of the box. It is easily made, and has a lifting strength with a large margin of safety.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(770.) A request has been received for the addresses of manufacturers of endless gray air bags.

(771.) A manufacturer requests the addresses of manufacturers of aluminum bronze powder.

(772.) Inquiry is made for the address of manufacturers or licensees of tire-engraving machines.

(773.) A subscriber requests the addresses of manufacturers of varnish to apply to proofed raincoat fabrics to produce a leatherette effect.

(774.) The manager of a production department asks if there is an organization for production managers which specializes on the tire and rubber industry.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from the following district or cooperative offices. Request for each address should be on a separate sheet, and state number.

DISTRICT OFFICES.

New York: 734 Customhouse.
Boston: 1801 Customhouse.
Chicago: 504 Federal Building.
St. Louis: 402 Third National Bank Building.
New Orleans: 1020 Hibernia Bank Building.
San Francisco: 307 Customhouse.
Seattle: 848 Henry Building.

COOPERATIVE OFFICES.

Cleveland: Chamber of Commerce.
Cincinnati: Chamber of Commerce.
General Freight Agent, Southern Railway, 96 Ingalls Building.
Los Angeles: Chamber of Commerce.
Philadelphia: Chamber of Commerce.
Portland, Oregon: Chamber of Commerce.
Dayton, Ohio: Dayton Chamber of Commerce.

(31,625.) A firm in Spain wishes catalogs and price lists of automobile accessories and tires with a view to securing exclusive agencies. Correspondence and catalogs may be in English, but Spanish preferred.

(31,627.) A man in Brazil wishes to buy machinery for the manufacture of rubber articles. Quotations c. i. f. Brazilian port. Correspondence may be in Portuguese or Spanish. Catalogs and price lists requested.

(31,653.) American trading company with branches in the Netherlands, Germany and France, wishes an agency for automobile sundries, tires, etc.

(31,666.) A firm of contractors in Germany wishes to represent American firms for the sale of rubber.

(31,689.) Manufacturers in Spain wish sole agency on commission for the sale of belting, rubber goods, etc. Correspondence in Spanish.

(31,730.) A trading company in the Netherlands wishes an agency for the sale of raincoats. Quotations c. i. f. Rotterdam. Cash against documents.

(31,734.) A firm in Australia wishes to secure an agency for the sale of oilskin suits, coats, leggings, mackintoshes, motorcycle suits and capes, and kindred goods. Quote c. i. f. Australian port. Payment by 30 days' sight draft.

(31,774). A firm in New Zealand desires to purchase and to secure an agency for high grade motor tires.

(31,814.) An American firm with branches in Egypt and Greece wishes agencies for the sale in the Levant of automobile tires. Quote f. a. s. Payment in New York.

(31,822.) A merchant in the British West Indies wishes to buy men's and women's cheap white canvas rubber-soled shoes.

The Manufacture of Elastic Fabrics.

One of the oldest of rubber products is elastic webbing. It is also one that is but rarely described. The European looms since 1914, were transferred from elastic webbing containing rubber thread to plain cotton webs for military use. American factories were therefore called upon to furnish the world's supply. The foreign demand still continues, hence the timeliness of this article.

ELASTIC FABRIC FROM RAW RUBBER.

NEARLY TEN YEARS before Goodyear's discovery of vulcanization, india rubber was used in the making of elastic fabrics. A factory in America and another in France produced quantities of these goods. The process was cutting balls of fine Pará rubber in halves and pressing the halves out flat. From these, long, wide strips were cut by a circular knife, the strips being skived at the ends, and stuck together by hammering on an anvil. The wide strips were then cut into threads by a slitting machine, the threads being wound on reels, and left for a period of six weeks to harden. The weaving of this rubber thread into the fabric was first done on hand looms, the rubber being stretched as much as it would stand. Then the final touch was given to impart elasticity to the fabrics. This was accomplished by moistening the fabric, and running a heated iron over it, which process steamed and softened the outer covering, and allowed the stretched rubber to shrink to about two-thirds of its former length. This drew the woven covering with it and rendered the fabric somewhat elastic.

EARLY INVENTIONS.

Goodyear and other early inventors, after the year 1840, spent much time in experiments along the same lines, using sheets of vulcanized rubber instead of threads. Any loosely woven, non-elastic fabric will stretch more or less on the diagonal of the lines of the weave. This property was utilized by cementing fabric so stretched to a sheet of rubber. This was the basis of the Tyer patents. Another plan was to combine a soft, woven cloth with a stretched sheet of rubber by cementing the two together. Sometimes the rubber was placed between two such non-elastic fabrics. When allowed to contract, the rubber would pucker the cloth, or "shir" it, thus giving the compound material the name of "shirred" goods. But it was with the production of vulcanized rubber thread, and the adaptation of various looms to weaving into fabrics that the best product was evolved.

The materials entering into the manufacture of elastic fabrics are cotton, wool and silk yarns or threads, and rubber thread. The products are suspenders, garter webs, arm bands, goring for elastic side shoes, fabrics for surgical bandages, corsets, ladies' belts, and a thousand other articles where combined elasticity and durability are required.

WEAVING NON-ELASTIC FABRICS.

In weaving ordinary non-elastic cloths, the yarn, after arrival at the factory in skeins, is first dyed the required color, and then wound on bobbins or spools, some to be used for the warp and some for the weft or filling. In making the warp the requisite number of spools of this yarn are placed in a creel, so arranged as to carry out any desired color scheme; the ends are run through a reed, and then wound together on a large bobbin called a warp beam. This warp is then taken to the loom, and for the simplest form of cloth is threaded, by alternate threads, on two harness frames. In operation of the loom, these two harness frames rise and fall alternately, creating what is called a "shed" or opening through the warp threads, for the passage of the shuttle, which flies backward or forward at every "pick" of the loom, carrying the weft through the opened-up warp at each passage.

When a fancy weave is desired, the number of harness frames is increased according to the complexity of the design, and the movements of the harness are governed accordingly, the harness is used in the pattern sometimes running as high as twenty-five. In more elaborate designs and effects the Jacquard machine is often employed, which, instead of operating groups or sections of threads by the use of harness frames, operates each individual thread independently. This is done by the use of cards having perforations to correspond with each thread in the warp, such perforations being cut according to design. These cards revolve round a cylinder, thus governing the movement of each thread as the shuttle travels back and forth across the shed. Complex as are such looms, the elastic, narrow fabric looms are more so, because, instead of weaving a single fabric, they weave simultaneously a number of fabrics, from 12 to 48, according to the width and character of the goods being made. Each of these webs is made by a perfect loom in itself, having its own set of warps, shuttle and harness, all contained in one loom frame. The machines may make one or more patterns at the same time, according to the scheme of harness draft, or patterns cut on the Jacquards employed.

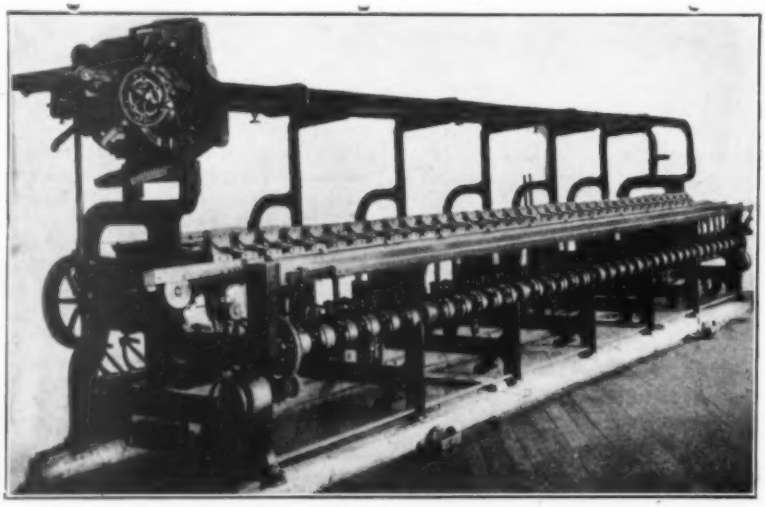


FIG. 1.—CROMPTON-KNOWLES SUSPENDER LOOM.

THE ELASTIC WEB LOOM.

If to this complex mechanism are added two new elements, one may imagine the intricacy of the elastic web loom. One of these requisites is the introduction of the rubber thread warp, woven under a very high tension, bound or woven in between two distinct cloths, often of different colors and texture, in such a way as to hide the rubber threads completely. The other requisite is the complicated arrangement of the harness, so as to produce in the weaving two distinct cloths, an upper and a lower, so bound together as to weave the stretched out rubber thread between them, thus affording it protection against exposure, wear and tear.

The rubber threads are handled in the loom in the same way

as the yarns in the warps, but it is necessary that they be woven under tension, otherwise there would be no contraction of the fabric after it is woven, and therefore no elasticity. This matter of tension is important, and requires careful adjustment, according to the amount of elasticity desired. This is accomplished in a comparatively simple manner. The rubber threads are wound tightly upon a large spool or beam at the back of the loom, and from this they are run through reeds and harness. To retard this thread, so that it goes through the loom at a tension, various kinds of brakes are used, which automatically regulate the feed.

SUSPENDER LOOMS.

Perhaps the most complicated looms for these fabrics are those used for the manufacture of suspender webs. Such webs are made with various patterns in the weave, and in a variety

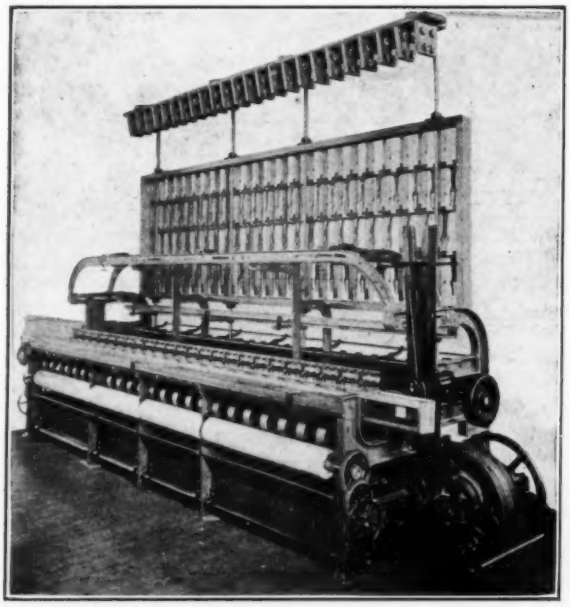


FIG. 2.—SCHAUM & UHLINGER SUSPENDER LOOM.

of color designs for ornamental purposes. Most of the looms carry about 24 shuttles, and make simultaneously that number of webs, all of one pattern. Some looms have shuttles that move in a semi-circle, rather than a straight reciprocating motion, which saves much space, and allows about 36 shuttles to work in the same length of loom as 24 laterally moved shuttles. Again, there are some looms which have only three shuttles. Each of these schemes has its advantages. When a thread breaks the stopping of a loom for its repair may delay 24 or 36 shuttles, but only 3 in the smaller machine, although one operator can oversee more webs on the larger loom than on a multiple of the smaller. The webs are mostly made between 1⅛ and 2 inches wide, and contain from about 15 to 38 strands of different sized rubber. Some webs, called "truss webs," have an extra thickness of fabric on the back to protect the rubber strands from perspiration, for this emanation is especially destructive.

Some suspender webs have a surface design overshot with silk in various colors; and these necessitate in some cases the use of 15 or 18 harness frames, and the employment of special devices to regulate the warp threads as the shuttles carry the colored silks across. Every conceivable shade and color of yarns are employed, of sizes ranging all the way from 10/2 to 100/2.

WEAVING FANCY SUSPENDER WEB.

The loom shown in Fig. 1 is a popular type used for the manufacture of fancy suspender webs. It combines great capacity for elaboration of design with high speed of operation. This loom was introduced about 1875. Up to that time all fancy effects made in elastic webs were produced on jacquard looms, which were necessarily slow running and complicated to operate, thus making the goods very expensive. The Jacquard machine has been largely superseded by the fancy head loom.

With the fancy head it is possible to operate as high as 25 harness, and the length of the design is governed by a chain of any length, so that a large scope of figures is obtainable. This does not in any way interfere with the speed and production of the loom. Another feature of this machine is the differential take-up gears which feed the web down through the press rolls as it is woven. This consists of a series of boxed-up gears, so arranged that by a simple movement the feed can be made either fast or slow, without the change of any gear, as is necessary with the ratchet take-up.

Another loom shown in Fig. 2 is a 24-piece, straight shuttle, end-cam suspender loom. Instead of the movements of the harness being controlled by cumbersome and almost inaccessable cams and their shaft running through the entire loom with its tangled mass of wires connected to the cam levers and the harness, there is a small set of end cams and cam jacks with wires running over pulleys set in the main arch of the loom frame, direct to the harness. These cams, which are seen on the right end of the machine, are easily accessible for adjustment and repair, and are very simple of operation. Great improvement has also been made in the press rolls, which are not only much more simple and compact than formerly, but where operation is controlled positively by ratchet take-up gears, fixed at the end of the loom, and which can be easily changed to accommodate to any desired feed. Perhaps the greatest change and improvement lies in the introduction of the warp levers, which automatically control the let-off of the cotton warp beams, doing away with the old-fashioned method of letting down the weighted pulley blocks. Such a loom is adapted for making all plain and twill goods, and can be run at a speed of about 160 picks per minute, producing about 2,000 yards per week.

When the webs are woven they are automatically wound upon rolls at the looms, from which they are removed in lengths of about 200 feet, the cuts generally being made at a place where a new lot of rubber or yarn has been started.

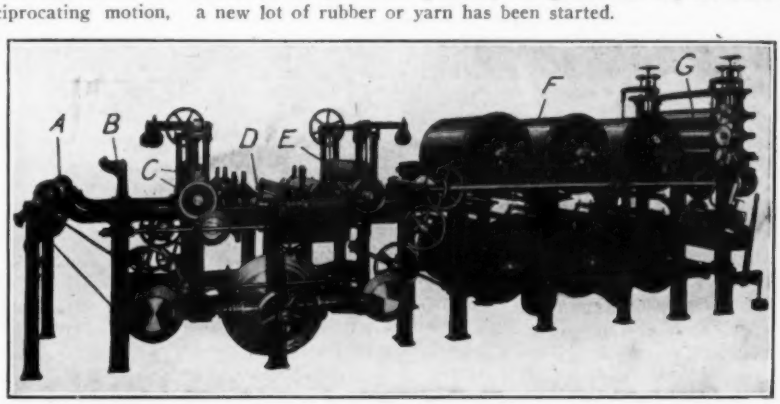


FIG. 3.—MACHINE FOR FINISHING ELASTIC WEBBING.

BURLING, SINGEING AND FINISHING.

As the web comes from the loom, there is more or less lint adhering to it. In some factories this is removed by passing the web through a burler. This machine is a combination of

brushes and a rapidly revolving knife, which delivers the goods smooth and clean.

A very complete machine for finishing elastic webbing is shown in Fig. 3. The webbing is run through the machine just as it comes from the loom. It first passes between a pair of brushes, *A*, which remove the lint and loose threads. From the brushes the webbing passes over tension bars *B*, having guide fingers for feeding the fabric between a pair of nip rollers, *C*, which hold it at a proper tension. The webbing then passes through a long box, *D*, for sizing or starching, the surplus sizing being squeezed out by a second pair of nip rollers, *E*. From this point the webbing passes over six steam-heated copper cylinders, *F*, and through delivery rollers, *G*, to the winding-up reels. The upper deck of cylinders, *F*, may be driven at the same speed

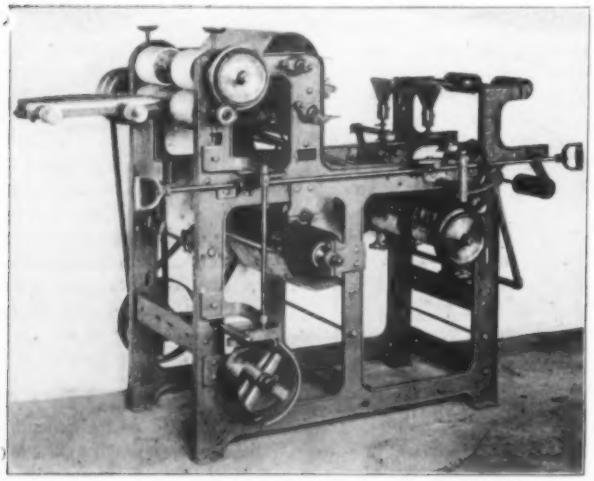


FIG. 4. KNAPP SINGEING MACHINE.

or faster than the lower deck, so that the webbing is allowed to shrink as much as desired. The delivery rollers, *G*, may be driven at varying speeds for obtaining a slight polish on the webbing.

Some goods are subjected to a singeing process for the removal of lint. The machine shown in Fig. 4 is very generally used for singeing elastic webbing and shoe goring. The goods are singed on both sides at the same time, and are brushed both before and after singeing. The machine has an automatic device which removes the burners from contact with the goods when the mechanism stops, so that the fabric cannot be injured. Water rolls are employed as an additional precaution against injury.

The atmospheric condition has an influence on the rubber thread while weaving, and sometimes the fabric comes out in a more or less kinky condition. It therefore becomes necessary to finish it, which is done by first passing the webs through live steam, which has the effect of softening the outer cloth, and allowing the elastic more power to contract, thus increasing its elasticity. Then a size is applied, and the web run over heated drums, which dry the fabric and deliver it from the calender smooth and straight. It is then coiled in rolls as it leaves the machine, and if the web is then found to be long-sided or crooked, such rolls are steamed and placed on a heated plate until corrected. The webs are then inspected, measured and labeled, and stored in a dark, cool cellar until needed for the market.

A COMMERCIAL REPORT FROM BUCHAREST STATES THAT THERE is a great and urgent demand for rubber-soled sport shoes and general rubber goods in Rumania.

MEETINGS AND BANQUET OF MOTOR AND ACCESSORY MANUFACTURERS ASSOCIATION.

AT THE FIRST MEETING of the 1920 Board of Directors of the Motor and Accessory Manufacturers Association held January 8, officers were elected and committees appointed for the new year.

With one exception the 1919 officers were reelected. Thomas J. Wetzel, one of the retiring members of the board of directors, is succeeded as secretary and assistant treasurer of the association by G. Brewer Griffin, Westinghouse Electric & Manufacturing Co., New York City, a new addition to the board.

Considerable changes were made in the makeup of the various committees of the board of directors, but the chairman in each case remains the same. The names of the officers and directors follow:

OFFICERS FOR 1920.

C. E. Thompson, president, Steel Products Co., Cleveland, Ohio.

E. H. Broadwell, first vice-president, The Fisk Rubber Co., Chicopee Falls, Massachusetts.

Christian Girl, Standard Parts Co., Cleveland, Ohio.

W. O. Rutherford, The B. F. Goodrich Co., Akron, Ohio.

L. M. Wainwright, treasurer Diamond Chain & Mfg. Co., Indianapolis, Indiana.

G. Brewer Griffin, secretary and assistant treasurer, Westinghouse Electric & Manufacturing Co., New York City.

BOARD OF DIRECTORS.

C. E. Thompson, Steel Products Co., Cleveland, Ohio.

E. H. Broadwell, The Fisk Rubber Co., Chicopee Falls Massachusetts.

Christian Girl, Standard Parts Co., Cleveland, Ohio.

W. O. Rutherford, The B. F. Goodrich Co., Akron, Ohio.

L. M. Wainwright, Diamond Chain & Manufacturing Co., Indianapolis, Indiana.

G. Brewer Griffin, Westinghouse Electric & Manufacturing Co., New York City.

E. E. Allyne, Aluminum Manufacturers, Inc., Cleveland, Ohio.

E. W. Beach, Ferro Machine & Foundry Co., Cleveland, Ohio.

G. W. Yeoman, Continental Motors Corp., Detroit, Michigan.

E. P. Hammond, Gemmer Manufacturing Co., Detroit, Michigan.

J. M. McComb, Crucible Steel Co. of America, Pittsburgh, Pennsylvania.

A. W. Copland, Detroit Gear & Machine Co., Detroit, Michigan.

Following the annual meeting on January 7 the Association held its banquet in the Grand Ball Room of the Commodore Hotel. Approximately six hundred men were present. The entertainment program consisted of an all-star vaudeville bill, together with a number of other unusual features, including the first photoplay production of the association. It was a one-reel showing of "Our Own Topics of the Day," presented for the first time on any screen, and plotted, planned and produced for the entertainment of the Association.

THE PHILIPPINE ISLANDS AS THE SOURCE OF AMERICA'S FUTURE crude rubber supply is predicted by foresighted men of the rubber industry. In a recent statement, F. A. Seiberling, president of The Goodyear Tire & Rubber Co., declared that if importation of coolie labor was allowed in the Philippines, enough crude rubber would be produced to make America independent of relying on importations from other countries.

IT WAS ANNOUNCED LATE LAST MONTH THAT HARRY S. VORHIS, OF the Gutta Percha & Rubber Manufacturing Co., New York City, has been appointed general manager of the Mid-West Rubber Manufacturers' Association, and will take charge February 1.

What the Rubber Chemists Are Doing.

VARIABILITY IN PLANTATION RUBBER.[1]

AT THE CENTRAL RUBBER STATION a number of samples of the ordinary output of estates in the Netherland Indies are regularly tested. The review of this work by O. de Vries and W. Spoon is outlined in abstract as follows.

TENSILE STRENGTH.

The differences in tensile strength between smoked sheet and crêpe are inconsiderable. A real intrinsic difference in tensile strength between sheet and crêpe, tested in a strictly comparable manner, is hardly to be expected, as the difference in their preparation does not affect the tensile strength. Even the greater degree of milling in the preparation of crêpe in ordinary estate practice does not affect the tensile strength, the young rubber, still wet, regaining its strength completely, in contrast with excessive plasticising of older, dry rubber which often becomes heated in the process and loses tensile strength.

There is a marked difference in tensile strength in rubbers from different estates. As to the causes of the deficiency in this respect, our knowledge is still incomplete. The already known factors in preparation (excessive heat; tackiness, caused by copper salts; sunlight or lower organisms; growth of molds resulting in violet-colored spots in crêpe; use of some chemicals, as sulphuric acid or alum in coagulation) cannot give an explanation in such cases. Other known causes, such as latex from young trees, or excessive tapping of trees that will have to be thinned out, also do not always offer a sufficient explanation. It may be possible that soil, climate, or hereditary factors (strain of seed) play a rôle—factors which it would be very difficult to eliminate, so that a uniform high tensile strength for all estates cannot be reached at will.

SLOPE.

"Slope" is the stretch produced by a certain load at high elongations (determined after the method of Schidrowitz). A low figure for slope denotes a rubber with a great resistance to stretching at high elongations. The slope shows a relation to permanent set.[2] The average figures for slope of the samples tested in 1917 and 1918 are:

	1917.	1918.
Smoked sheet	37.2	36.5
Crêpe	35.9	35.5

Smoked sheet averages somewhat greater slope than crêpe. The variation in both grades is not large, nearly all samples falling between 34 and 39, while the ordinary figures for crêpe are 35-37 and for smoked sheet, 36-38. Whether this difference is of any practical importance in the comparison of first-grade samples will have to be investigated. The large deviations in slope are found in the lower grades, where the characteristic becomes typical.

RATE OF CURE.

The authors' "standard time of cure" in testing is the time necessary to bring the stress-strain curve to standard position (length 900 per cent at 1.30 kilograms load).

The rate of cure is the property that has drawn the greatest amount of attention from most investigators, and certainly there was reason for it. It should, however, be stated clearly that the quality of the product in the strict sense of the word is expressed by tensile strength and slope which represent intrinsic properties of the rubber, while rate of cure is a property of more or less accidental nature. Faults in this respect cause trouble to the manufacturers, but are not irreparable, while shortcomings in tensile strength (in the sense of maximum tensile strength as we determine it) or slope cannot be remedied.

For 1917 and 1918 the average figures and the normal values of smoked sheet and first-quality crêpe have remained practically the same. The time of cure for smoked sheet is nearly 20 minutes shorter than that for crêpe, while the variability is 1¼ to twice as great. The same difference in standard time of cure (20 minutes) was found for smoked sheet and crêpe prepared from one lot of bulked latex, while for unsmoked sheet the time of cure was 29 minutes shorter.

The factors causing variability of line are: (1) composition of latex; (2) chemicals added; (3) changes in the non-rubber constituents; (4) smoke constituents and decomposition products formed by heating. The adoption of standard methods of rubber production is most important. Bulking of the largest possible lots of latex is one of the first needs to obtain a uniform product.

VISCOSITY.

As our knowledge now stands, viscosity determination in general cannot be used to judge of the properties after vulcanization, but supplies very useful figures to give an indication as to the cause of deviations. A fairly uniform rate of cure may be accompanied by rather large oscillations in viscosity. The explanation is that the estate prepares smoked sheet after standard methods but uses a so-called Barker smoke-house in which temperature may vary considerably, causing deviations in viscosity. Uniformity in viscosity does not insure uniformity in rate of cure and tensile strength, owing to factors causing a greater rate of cure and higher viscosity by incipient maturation.

A change in viscosity that accompanies a deviation in rate of cure may indicate whether the cause is to be looked for in errors or irregularities in the preparation, or in changes in the latex (condition of the trees) and may give very useful indications for controlling the methods of preparation on the estates and the properties and uniformity of their output.

EFFECT OF SOAKING COAGULUM IN WATER.

Dr. O. De Vries has reported in the Communications of the Central Rubber Station[3] the results of his investigation of the effect produced on the properties of the rubber by soaking the rolled or unrolled coagulum in water.

(1.) The general effect of soaking the coagulum, rolled or unrolled, in water is, in the first place, to cause an extraction of serum substances, a loss in weight in the dry rubber, and a decrease of cure. When kept in water a longer time, maturation sets in, which causes a further loss in weight, while the rate of cure increases and the original retardation diminishes or changes into an acceleration. The accelerators form in spite of the fact that a considerable part of the serum substances has been first removed by the water.

2.) The loss in weight by soaking amounts to 0.2 to 0.4 per cent for crêpe; ½ to 3 per cent for sheet, and 0.2 to 2 per cent for unrolled coagulum, according to hardness of coagulum, duration and intensity of extracting, etc.

(3.) Crêpe rubber that has so abundantly been treated with water during rolling, shows practically no change when soaked in water for a few hours after rolling.

(4.) Soaking freshly rolled sheet rubber in water has a more marked effect, which is considerable when the sheets are kept in water from ½ to five hours. Extraction for ½-hour gave, on the average, an increase of 13.45 per cent in time of cure, while for one to five hours gave average figures from 17½ to 25 per cent. Keeping in water a night causes the rate

[1] O. de Vries and W. Spoon, *"Archief voor de Rubber Cultuur,"* July, 1919, page 266.

[2] "Journal of the Society of Chemical Industry," volume 36, page 1258.

[3] *"Archief voor de Rubber Cultuur,"* September, 1919, page 369.

of cure to increase again, the average decrease is only 16 per cent; keeping in water for 48 hours gives a still smaller decrease, on the average 11.7 per cent. The maturation gradually tends to equalize the effect of the extraction of serum substances, and freshly rolled sheet kept seven days under water shows a time of cure of 55 minutes, nearly that of matured rubber.

(5.) Soaking sheet rubber in water does not prevent rustiness.

(6.) Keeping the freshly rolled sheets in water for some time is of prime importance, not only to prevent the cases of greasiness (hydroscopic serum substances on the surface of the sheet), but to diminish the tendency to moldiness.

(7) Keeping the unrolled coagulum in water gives similar results, but the effect differs with the thickness and hardness of the coagulum.

The simplest way to prevent rustiness in actual estate practice is to take care that the surface of the sheet dries so rapidly that the micro-organisms, that grow only on the surface exposed to the air and need moist surroundings, have no time to develop.

CONCLUSION.

The defect called "rustiness" in sheet rubber is not caused by a film of serum-substances, notably proteins, dried on the surface of the sheet, but it is formed by decomposition of the serum-substances by an ærobic micro-organism.

THE CAUSE OF RUSTINESS IN SHEET RUBBER.

In the Communications of the Central Rubber Station,[1] H. J. Hellendoorn discusses the causes of rustiness in sheet rubber, summarizing his experiments as follows:

In experiments in the laboratory and on estates, rustiness was always produced at will by keeping the freshly rolled sheets for some time, 24 or 48 hours, in a moist atmosphere. The degree of moisture of the atmosphere in which the sheet hangs shortly after rolling, is of the greatest importance. Sheets taken immediately after rolling into a drying room of higher temperature (40 to 60 degrees C.) never show rustiness, while air drying at room temperature produces rustiness during periods of wet weather.

When coagulum is kept in the dishes some time after coagulation, as over night, the side of the sheet that corresponds to the upper part of the coagulum—the layer that was exposed to the air, shows rustiness to a larger extent than the lower parts of the coagulum. The explanation is that on the surface of the coagulum the infection, and perhaps a growth of the ærobic micro-organisms may start earlier.

Rustiness can be prevented by disinfecting the surface of the freshly rolled sheet by soaking it for some time in dilute solutions of formalin, chinosol, or bisulphite. The same disinfecting effect may be produced by keeping the freshly rolled sheet for some time in the vapors of boiling water, or by immersing the sheets in hot water (60 degrees C.) This is the well known method formerly used to prevent rustiness and surface oxidation by enzymes.

The micro-organisms causing rustiness are ærobic; that is, they need air for their growth and do not thrive where the air cannot penetrate. For instance, when a freshly rolled sheet is tightly rolled up and placed in a moist atmosphere, only the parts exposed to the air develop rustiness, while the parts of the surface that stick together, so that the air cannot penetrate, remain free of rustiness. Like all micro-organisms, those causing rustiness have an optimum temperature (about 40 degrees C.).

The thin layer of serum-substances that remains on the sheet after most of the serum has dripped off, or the by-substances absorbed by the rubber, form the sources of nourishment for the micro-organisms. Dilute serum seems to be preferred to the undilute. Soaking the sheets in water after rolling, so that a great part of the soluble serum-substances is removed, does not prevent rustiness. In fact, under favorable circumstances rustiness develops on such sheets to a much larger degree. It is well known to planters that when sheets are soaked in water and the dilute serum so formed is kept for some time, a jelly-like substance develops, as if some grease or fat had been extracted from the sheets. This jelly-like substance is probably closely related to the substance forming the film of rustiness.

The question is of some practical importance whether smoke forms a sufficient disinfectant to prevent the growth of the organisms causing rustiness. Wet sheets hung in a smoke house at a somewhat elevated temperature and without much ventilation would be under favorable conditions for the development of micro-organisms, unless the smoke acted as a preventive. It seems that smoke does hinder the formation of rustiness under such circumstances to some extent, but does not wholly prevent it; and especially in places where the smoke does not penetrate so easily, for instance, near the sticks, or in places where two sheets come very close together, rustiness may develop. If care is taken that the sheets air-dry rapidly, so that they are sufficiently dry when they are placed in the smoke house, the disinfection by smoke is of no further importance.

[1] *"Archief voor de Rubber Cultuur,"* October, 1919, page 431.

DETERMINATION OF IRON AND ALUMINUM.

By C. B. Clarke.

The following is a method for the quantitative determination of iron and aluminum in ignited mixtures containing much greater amounts of alumina than ferric oxide.

The finely divided oxides are intimately mixed with acid potassium fluoride in a platinum crucible. The mixture is fused over a small flame until, after a few minutes, it becomes solid. Dilute sulphuric acid is then added, and the greater part of the hydrofluoric acid expelled by heating for a short time. The sulphates are then dissolved in water in a platinum dish; the iron is reduced by sulphur dioxide, the excess of which is expelled by carbon dioxide, the liquid is then titrated with permanganate of potassium in a Jena glass beaker.

In one analysis by this method, in which 0.007-gram Fe_2O_3 was present in 0.094-gram of mixed oxides, 0.0065-gram Fe_2O_3 was found.

The presence of considerable quantities of potassium hydrogen fluoride does not interfere with the titration.

The advantages of this method over that of fusing with potassium bisulphate are that no platinum passes into solution, and that it is much quicker.

INFERIOR GRADES OF RUBBER.

Dr. A. J. Ultée[1] has investigated the inferior grades of rubber to determine whether, besides the differences in external appearances, the internal qualities of such kinds of rubber show any difference. For this purpose the viscosity and the percentage of ash were ascertained from samples of pale and dark scrap of the same estate. The dark scrap gave a lower viscosity figure (averaging 97 against 113 for pale scrap) and a higher ash per cent (averaging 0.68 against 0.51 for pale scrap).

MAXIMILIAN TOCH, OF TOCH BROTHERS, MAKERS OF CHEMICALS and technical paints, has been appointed Adjunct Professor of Applied Chemistry at Cooper Institute, New York City, where he will give a course on the chemistry of india rubber.

[1] Communications of the Besoeki Experimental Station, Rubbber Series No. 12, *"Archief voor de Rubber Cultuur,"* September, 1919.

CHEMICAL PATENTS.

THE UNITED STATES.

PRODUCING RUBBER SYNTHETICALLY. The process of changing limonene into a rubber-like substance, which consists in bringing the limonene into contact with metallic sodium. (Louis Gottschalk, Rahway, New Jersey; Esther Gottschalk, administratrix of Louis Gottschalk, deceased. United States patent No. 1,323,589.)

SEALING COMPOSITION FOR CANS, consisting of crude rubber, benzol, beeswax, paraffine wax, and talcum powder in proportions set forth. (Austin Gilbert and Charles E. Vander Hoof, assigners to the Fischer Can Co.—both of Hamilton, Ohio. United States patent No. 1,323,752.)

VULCANIZATION PROCESS AND PRODUCT. A product made by incorporating a product of hydrolytic decomposition of a proteid and heating the resultant mixture with a vulcanizing agent to effect vulcanization. (Clayton W. Bedford, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio. United States patent No. 1,323,951.)

PROCESS OF RECLAIMING RUBBER, comprising treating simultaneously the vulcanized material in proper condition and under heat and pressure with a devulcanizing agent comprising xylol and aniline in the presence of a substance capable of combining with or absorbing sulphur. (John Young, Akron, and Winthrop W. Benner, Cuyahoga Falls, Ohio, assignors to the Firestone Tire & Rubber Co., Akron, Ohio. United States patent No. 1,324,093.)

COATED FABRIC, comprising a sheet of fabric having a base coating containing rubber and a surface coating containing nitrocellulose. (Clarence Weare Howlett, Kokomo, Indiana, assignor to E. I. du Pont de Nemours & Co., Wilmington, Delaware. United States patent No. 1,324,154.)

LEAKPROOF COMPOSITION FOR TIRES, a composition for filling the walls of tire tubes. A mixture of about 16 parts of mineral wool to one of a mixture of gelatine and soap in proportion of about two of gelatine to one of soap and two ounces of the mixture mixed with a quart of water. (Arthur W. Swanberg, Minneapolis, Minn., assignor to Waldo B. Berryman, Lima, Ohio, United States patent No. 1,326,007).

RUBBER AND METHOD OF OBTAINING IT by incorporating therewith sulphur, titanic oxide, zinc oxide, a black carbon pigment, and an accelerator of vulcanization other than titanic oxide, and vulcanizing the mixture. (Louis E. Barton, Niagara Falls, New York, and Henry A. Gardner, Washington, D. C., assignors to The Titanium Alloy Manufacturing Co., New York City. United States patent No. 1,326,319.)

VULCANIZED LEATHER SUBSTITUTE. Formed of a composition of matter composed of an excess by weight of rubber, and an excess by bulk of cork particles in combination with a fibrous material, reclaimed rubber, sulphur and glue. (Justus W. Matthael, Ingram, assignor to Armstrong Cork Company, Pittsburgh—both in Pennsylvania. United States patent No. 1,326,681).

THE UNITED KINGDOM.

REGENERATED VULCANIZED RUBBER is secured by first pulverizing the material, then heating it in a vacuum or in the presence of an inert gas with continuous agitation, such as carbon dioxide or nitrogen, the temperature being such that fusion of the mass does not occur, and then when the heated mass is sufficiently plastic, suddenly cooling it by spreading on a cold stone or by projecting it into cold water or into a solution of sodium carbonate, caustic soda lye, or other liquid. (B. J. F. Varenhorst, 25 Jacob Gillesstraat, Haag, Holland, British patent No. 133,369).

THE DOMINION OF CANADA.

RUBBER COMPOUND of improved toughness, consisting of mixing on heated rolls rubber, vulcanizing material, thin roughened flakes of tough, durable, flexible, resilient material (such as fish scales) and then vulcanizing the mixture. (Niels D. Nielsen, Elyria, Ohio. Canadian patent No. 194,716.)

RUBBER FABRICS. A compound integral rubber fabric comprising a stratum of moldable elastic rubber and a stratum of highly fiberized moldable rubber compound vulcanized together. (Gutta Percha & Rubber, Limited, assignee of John McI. Ogilvie, Toronto, Ontario, Canada. Canadian patent No. 195,326.)

OTHER CHEMICAL PATENTS.

GERMANY.

PATENTS ISSUED, WITH DATES OF APPLICATION.

305,624 "K." (June 10, 1917.) Process for the formation of substances resembling hard rubber. Transferred by Dr. Fritz Steinitzer, Fürstenfeldbruck bei München, to the Bakelite Co., Berlin.

317,145. (November 13, 1918.) Process for producing a substitute for gutta percha which is not sensitive to alcohol. Fabrik Oskar Skaller, Berlin.

317,721. (August 27, 1915.) Process for forming plastic substances from casein. Deutsche Kunsthorn Geschellschaft m. b. H., Hamburg.

THE FRENCH REPUBLIC.

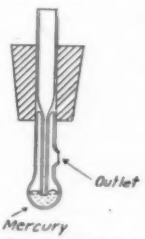
PATENTS ISSUED, WITH DATES OF APPLICATION.

495,284. (January 30, 1919.) Process for accelerating the vulcanization of rubber. J. F. B. van Hasselt.

LABORATORY APPARATUS.

SAFETY VALVE FOR DISTILLING FLASK.

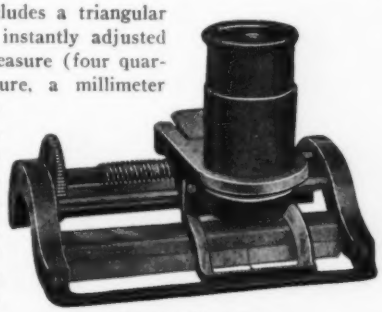
A VERY USEFUL SAFETY VALVE of interest to chemists is shown here as described by E. Rittenhouse in "The Journal of Industrial and Engineering Chemistry," August, 1918, page 633. The valve is intended for use in a distilling flask when determining ammonia by absorption in standard acid solution. It will prevent the acid from going up into the flask by letting air in and breaking the vacuum. The valve is made entirely of glass, with a drop of mercury in the bulb. It is very effective, never sticking, always set. The principle, namely, the pressure due to a column of mercury, can be adapted to all low-pressure work, both above and below that of the atmosphere.



SAFETY VALVE.

THREAD COUNTING MICROMETER.

In rubber works control laboratories handling textiles, the need has long been felt for a better instrument than the ordinary pocket linen counter in common use. This need has been well met by the Lowinson thread counting micrometer shown in the illustration.


THREAD COUNTER.

The instrument includes a triangular scale, which can be instantly adjusted to provide an inch measure (four quarters), a linen measure, a millimeter measure, and the decimal parts of an inch. Being made of polished steel, each scale reflects the light upon the fabric beneath the lens. Greater stability is afforded by placing the knob, which, upon being moved by the finger, moves the index within, instead of outside, the frame of the instrument. By a disengaging device the index can now be quickly moved to any place on the scale. To facilitate the counting of even the finest fabrics a lens of unusually high power is provided. (Charles Lowinson, Inc., 366 Fifth avenue, New York.)

The Expansion of Rubber Compounds During Vulcanization.[1]

By C. W. Sanderson.

THE EXTENT to which rubber compounds will expand when subjected to the heat of vulcanization is of importance in the molding of rubber goods. As far as published results go, however, there are no available data on the value of the coefficient of expansion of rubbers of different compositions.

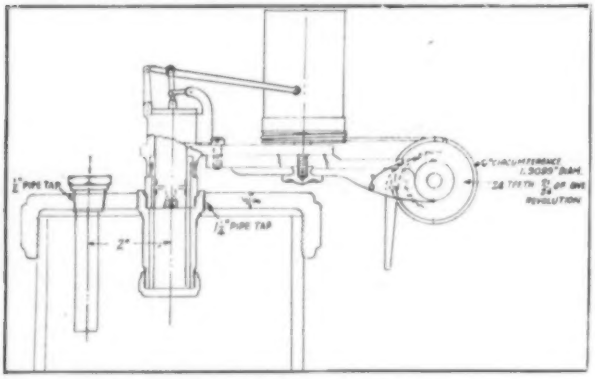


FIG. 1. RUBBER EXPANSION APPARATUS.

The work was undertaken by us primarily from a practical point of view, with the object of determining whether or not use could be made of an expansion test in distinguishing between stocks which move freely and mold well and those which do not mold well and are characterized as being "dead." Other possibilities suggested themselves and although the results are by no means complete or beyond question, they are set forth as we have found them.

APPARATUS.

A special apparatus was designed for the investigation (Fig. 1). It consists of a hollow steel cylinder which may be filled, with rubber and which is surrounded by a steam-jacket. The top surface of the rubber is the only surface free to move when the rubber is heated, and it acts against a piston and spring. The motion is transmitted through a magnifying lever to a recording pencil. The piston, spring and recording mechanism were taken from a Crosby steam indicator gage and made over to fit the apparatus. Above the piston is a place for a spring to keep

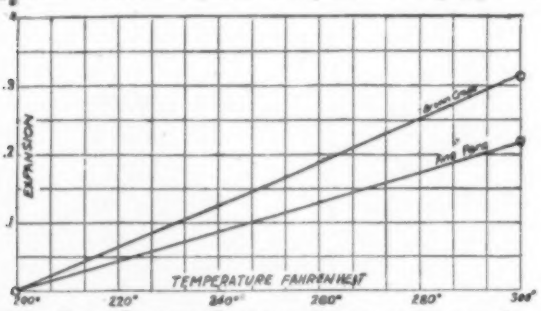


FIG. 2. CURVE SHOWING EFFECT OF RUBBER ON RATE OF EXPANSION 1698 FINE PARÁ *vs.* 1698 BROWN CRÊPE.

pressure enough on the rubber so that it will not "blow." Ten, 50 and 100-pound springs were used. The ten-pound spring was hardly strong enough to prevent blowing. The use of the 50 and 100-pound springs will be mentioned later.

[1]Published by courtesy of the American Chemical Society. Paper read before the Rubber Division of the American Chemical Society, at Philadelphia, Pennsylvania, September 4, 1919.

In making the determinations of the expansion the rubber was heated at a constant rate, usually 20 degrees per five minutes. The recording cylinder was advanced at each interval and from the values on this graph smooth curves could be drawn.

The dimensions of the steel cylinder were: diameter, 0.7978-inch; height, 2 inches.

These dimensions were chosen so that at room temperature (80 degrees F.) the volume of the contained rubber was one cubic inch. The motion of the recording pencil was reduced to the motion of the piston by dividing by six.

The cubical coefficient of expansion, derived from the regular forms, may be expressed in simplified form if we neglect the expansion of the steel shell and approximate.

$$\text{Thus, } a = \frac{x}{12\,t}$$

where t = temperature change and x = expansion recorded on the chart.

It was found that the differences in the results obtained with

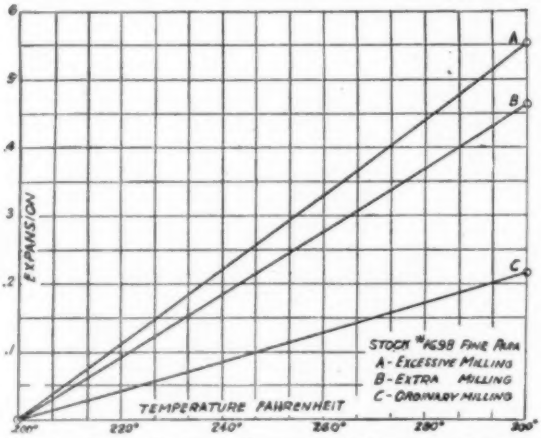


FIG. 3. CURVE SHOWING EFFECT OF MILLING ON RATE OF EXPANSION.

the exact and with the approximate formula were less than the experimental errors. The approximate formula was therefore used in our work.

VALUE OF THE COEFFICIENT.

No.	Use.	Coeff.[2]	Rubber by Vol. Per Cent.	Raw.	Sp. Gr. Cur.
1.....	Tube.	4.680×10^{-4}	90	0.89	0.96
2.....	Tube.	4.023×10^{-4}	94	0.95	0.95
3.....	Pneumatic tread.	3.365×10^{-4}	70	1.18	1.23
4.....	Semi-hard.	3.322×10^{-4}	48	1.41	1.47
5.....	Pneumatic tread.	3.000×10^{-4}	66	1.39	1.40
6.....	Sidewall.	2.807×10^{-4}	66	1.50	1.53
7.....	Solid tire.	2.828×10^{-4}	71	1.83	1.87
8.....	Pneumatic tread.	2.73×10^{-6}	59	1.44	1.53
9.....	Hard rubber.	1.121×10^{-4}	58	1.31	1.33

[2]Steel, 1.83×10^{-5}.
[2]Ebonite (Smithsonian table), 4.6×10^{-5}.

In general the results show that the higher the rubber content, the higher the coefficient of expansion. It is, however, difficult to show any definite relation because, as will be shown later, other factors enter in.

NATURE OF THE EXPANSION.

The graphs obtained showed that after the first fifteen minutes the expansion curve was practically a straight line. The beginning of its curve showed a lower scope because of the fact that the rubber was not thoroughly heated through or perhaps

had not been put in so as entirely to fill its cavity. Therefore, all measurements taken to determine the value of the coefficient were taken over the range of 100 degrees to 300 degrees. Some of the lower grade compounds, especially those with high sulphur contents, showed a lessening of the slope and even a falling off in the curve after 300 degrees had been reached.

INFLUENCE OF THE RUBBER.

Two samples were made up from the same formula, using in one fine hard Pará and in the other a soft grade of brown crêpe (Fig. 2). Each was subjected as nearly as possible to the same amount of milling. The Pará sample gave a coefficient of 2.337×10^{-4}, while the brown crêpe gave 4.49×10^{-4}.

INFLUENCE OF THE MILLING.

Other parts of the same batch with the Pará rubber were subjected to further milling and a sample gave a coefficient of 4.680×10^{-4}, while another sample which had been milled to excess on hot rolls gave a value of 4.786×10^{-4} (Fig. 3). Then it is seen that milling increases the expansion and brings the value of Pará up to that for the brown crêpe.

VOLUME CHANGE AT CONSTANT TEMPERATURE.

One of the first questions which arose in connection with the expansion of the rubber was whether or not there was a break in the curve or, in other words, a volume change at the point of vulcanization. We know that a physical change takes place and that the specific gravity increases and therefore it was only natural to look for a drop in the expansion. The curves obtained with a rising temperature failed to show any drop, so samples were tried using a constant temperature o., in other words, subjecting the sample to the same condition as an ordinary cure (Fig. 4). The graphs failed to show any drop with the exception of the cases already mentioned. Even in those cases

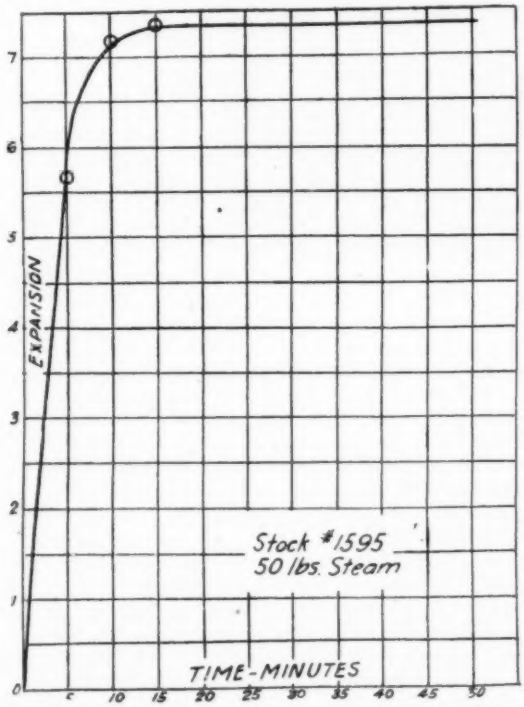


FIG 4. CURVE SHOWING EXPANSION AT CONSTANT TEMPERATURE.

the drop was very gradual and did not start at the point of vulcanization. Therefore, the method could not be used as a method of regulating or determining the cure of a sample of rubber.

Since the curves failed to show any volume contraction during the heating process, the increase in specific gravity which always occurs must come as the result of the pressure and the subsequent contraction on cooling. Since rubber is nearly incompressible, the decrease must come as the result of the squeezing of air out of the raw rubber. If this be true, then a compound

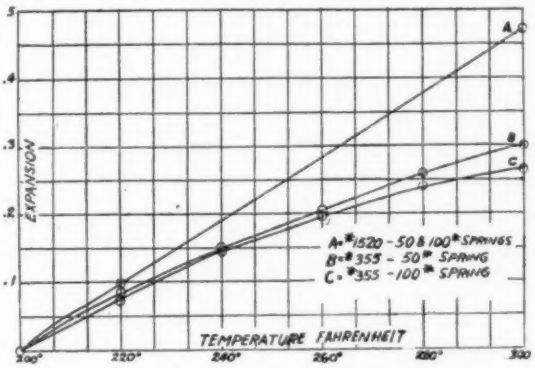


FIG 5. CURVE SHOWING EFFECT OF DIFFERENT PRESSURES ON TWO RUBBERS, ONE OF WHICH SHOWS A LARGE AND THE OTHER A SMALL DIFFERENCE BETWEEN RAW AND CURED SPECIFIC GRAVITIES.

showing a big difference between raw and cured specific gravity will expand more against a slight spring than against a strong one. This was tried out and found to be the case (Fig. 5).

	Expansion against Spring.	
Stock.	50-lb.	100-lb.
1520	3.81×10^{-4}	3.81×10^{-4}
355	2.17×10^{-4}	1.36×10^{-4}

Specific Gravities.

			Cured in Exp. Apparatus.	
Stock.	Raw.	Cured in Hydraulic Press.	50-lb. spring.	100-lb. spring.
1520	0.95	0.957	0.956	0.956
355	1.457	1.568	1.568	1.577

EXPANSION VS. CONTRACTION.

The increase in specific gravity shows that the contraction is greater than the expansion. Therefore the question arises whether or not the values obtained apply to the cured rubber. In order to determine this, measurements were made on samples cured in a disk mold.

Aluminum mold	1595 stock
Diameter of mold hot	$3^{31}/_{32}$ inches
Diameter of rubber cold	$3^{29}/_{32}$ inches

$$a = \frac{L_t - L_o}{L_o\, t} = \frac{0.0625}{39063\ (218)}$$

$$a = 0.00007339$$

$$a\ (\text{cubical}) = 2.20 \times 10^{-4}$$

This compares with 2.8×10^{-4} obtained the other way. This is a check considering the fact that the rubber was of a different sample and was from mill stock, while the expansiometer sample was from calendered stock. The conclusion may be drawn then that the coefficient determined between 200 degrees and 300 degrees be taken as sufficiently accurate for the coefficient for vulcanized rubber from the same sample.

CONCLUSION.

Although it is not yet possible from the results obtained with this apparatus to state definitely whether or not a stock will mold well in factory practice, it does give us a means of distinguishing between batches of the same stock which may have different properties, due either to rubber milling or other conditions.

The results may be summarized as follows:

I. The values of the coefficient of cubical expansion for different grades of rubber have been determined.

II. The higher the rubber content the greater the expansion.

III. The harder the crude rubber the less the expansion.

IV. The more the rubber is milled the greater the expansion.

V. There is no break in the expansion at the point of vulcanization.

VI. The increase in the specific gravity is caused by the pressure and not by physical change or internal contraction of volume.

FOUNTAIN PEN INK SACKS.

THE MECHANICAL perfection of fountain pens has enhanced their utility and convenience to the extent that their acceptance as a writing instrument is well nigh universal. As a result their manufacture has become a highly specialized and important branch of the rubber industry. The hard parts of the appliance, except the gold point, are made of high-grade vulcanite capable of rapid and accurate machining. The production of these parts has been reduced to highly efficient machine shop practices, in which sixty or more distinct operations are involved.

The well-known self-filling feature of fountain pens depends on the use of a rubber collapsible bag filling the pen barrel and serving as a reservoir of ink. It is connected with the ink-feeding device and so arranged that the user may expel the air from the bag by collapsing it and, by thus causing a vacuum, draw in the ink supply.

These soft rubber ink sacks are hand-made, requiring some deftness in manipulation in their manufacture. Briefly, calendered sheets of Pará rubber compound of good quality are coated on ribbed holland cloths for the production of a ribbed effect on the rubber. This ribbing in the finished bag serves as a support to maintain the cylindrical form when the sack is only partly filled.

SEAMING AND TRIMMING SACKS.

Although the corrugations on the sheet from which the sacks are made are usually produced as described above, there are other ways of doing it. For example, engraved rolls in connection with a calender are sometimes used, or impression plates of vulcanized rubber are substituted, the calendered sack sheet being placed upon the engraved plates and pressure applied until a definite ribbing is effected.

From the calendered sheet, short length strips are cut crosswise of the ribbing. These are formed into tubing of the required size by hand-drawing through a die which unites the edges in a perfectly tight joint. Sections of this tubing are cut, slipped over suitable forms and, by means of sharp scissors, cut to fit the taper of the form at one end and the hemispherical end of the other, these cuts being formed into tight joints by the thumb-nails of the operator.

Instead of drawing the sheet through a die, the sack stock may be furnished in continuous lengths by being run through a tubing machine. There is another way: After the pieces have been died into blanks of the proper width, the edges are cemented and seamed by hand, the thumb-nails of the worker finishing the seam. In a third process a hammering machine strikes the two edges together, causing them to adhere firmly.

The sacks are then packed in pans of soapstone and vulcanized in open heat. In making these sacks in quantity, the metal "formers" over which they are made are assembled by the hundred on boards, each "former" standing on end in a little hole let into the board.

In removing the sack from the "formers" after vulcanization, they are turned inside out to get them off, which leaves the corrugated surface on the inside. They are turned back, cleaned for a short time in a tumbling barrel, counted by weight, and are then ready for shipment.

SELECTING SERVICE MANAGERS.

By Adrian B. French.

THE DUTIES of a service manager are of such a nature that he can almost be termed a "Trinity." He must be in a position to listen to the story that usually accompanies a claim for adjustment and handle the situation in such a manner as to produce a result fair to both his firm and the customer. It is not an easy matter to effect such a condition; types of persons differ in temperament and each one has to be handled differently; a constant psychological study is necessary to produce the best results. As long as rubber tires are manufactured, there will be adjustments to be made; tires may be adjudged perfect, after test, yet use is the final proof of the serviceability of the tire. It is almost a physical impossibility to produce a tire that will meet the demands of everybody, and hence arise conditions that are cause for adjustments. These conditions differ according to the nature of the service the tire is asked to perform, as do also the class and conditions of roads over which it has to travel. No manufacturing process can anticipate these things. The service man has to be on the jump all the time to get at real facts and has to be careful to keep the customer "coming." He must therefore be the first of the trinity—a diplomat.

Tires are manufactured according to the best methods and with the best material obtainable, and workmen are trained to turn out the best possible work. There is represented in every tire put on the market the best possible of all elements that enter into its makeup. In order to know when a tire is good, it is necessary to be familiar with its manufacture. This is not to be learned by tearing a tire to pieces to find out what is in it, but by knowing how it is put together from the start to the finish of its process of manufacture. With this knowledge, intelligent adjustment of tires is made possible in connection with detecting the presence of physical defects. The service man must therefore be in a position to size up a tire and discover these things. In this regard he must be the second of the trinity—a tire maker.

In dealing with adjustments service men are continually confronted with the situation of "the customer." It is to his interest to serve him conscientiously and fairly and at the same time protect his company. At times he may have to deal with a customer who "has a grouch on," due to tire troubles. The branch wants that customer's name to remain on its books as long as his business yields a profit. The salesman who secured his business at the start started with a perfectly good tire with which to demonstrate his product; the service man starts with a tire a customer is claiming to be defective; he therefore has two things to accomplish, satisfy his customer on a basis of adjustment and also sell him a new tire. There is consequently a responsibility resting with the service man, that of being the third feature of the trinity—a salesman. And

he has to be an accomplished salesman at times to hold a customer's business. As a rule, too little attention is given the Service Department by branch managers, and yet the Service Department can wreck a branch. It is as indispensable to the success of a branch as the product to be sold is. It is easy enough to sell a line of goods that as a general rule enjoys a good reputation; it is a different matter to deal with customers whose business in the Service Department is 100 per cent "condition to correct."

It is therefore indispensable that care be exercised in selecting the service man. He should be of good appearance, intelligent, quick to size up a situation, possess a knowledge of his product, be a diplomat and a salesman. He should be of the caliber that branch managers are made of.

A WORD OF CAUTION CONCERNING PNEUMATIC TRUCK TIRES.

By J. Newton Gunn.

THE PRESENT TENDENCY of tire manufacturers to recommend to truck operators promiscuous change-overs from solid to pneumatic truck tires leads me to offer a word of caution.

In my opinion the time has come when intelligent advice should be given to the truck owners of the country on this subject. There is reason to doubt whether truck owners in changing over indiscriminately from solids to pneumatics understand that such a change-over is not always satisfactory and may even be harmful to their trucks. The truth of the matter is that there are certain circumstances under which it is wise for a truck owner to use pneumatic tires and other conditions under which it is wise to continue to use solids.

The chief purpose in making this statement at this time is to prevent dissatisfaction to truck owners who, attracted by the success of the big pneumatics, may be contemplating discontinuing the use of solid tires and using pneumatic in their stead without inquiring into the suitability of the pneumatics for their trucks or their particular needs. It would be well for an owner to consult with a tire expert before making such a change.

A fact realized by few is that motor vehicles are built as a rule to meet the conditions imposed by the tires they are to carry. Most people regard tires as an accessory which have little influence on the structural design of the vehicle, but automotive engineers know that it is the tires which determine the general characteristics of the vehicle they are to carry. The development of the pneumatic tire was the chief factor in making possible the passenger car of to-day.

All except a few of the motor trucks in operation to-day were built from engine to rear axle along lines which would make them adaptable for use on solid tires. In designing these trucks, the sole object of the engineers was to secure the highest efficiency of operation possible under the limitations imposed by the natural characteristics of solid tires.

A small number of firms build trucks especially for pneumatics, but the number of makes of this sort is very limited. The number will undoubtedly grow rapidly, for the advantages of having a truck ride on air are so apparent that the demand for trucks designed for pneumatics cannot help but become great in the immediate future.

A truck designed for pneumatic differs radically from one built for solid tires. Truck and tire engineers are now working together to solve the problem of faster highway transportation and the solution is found in a truck specially designed to operate on pneumatic tires, having a chassis corresponding to that of a passenger car, an engine which will drive the vehicle at high speeds and still show the necessary economy in gasoline and oil, a rear axle and differential gears which will compensate for the larger outside diameter of the tires, and a braking system that is powerful enough to give the driver complete control of the heaviest truck under all conditions.

It is because most trucks are designed for operation on solids that truck users may find pneumatics unsuited to their requirements. If a truck designed for solids is changed over to pneumatic tires, the increased cost of this equipment can be most easily offset by increasing the radius of action; that is, increasing the speed. While the tires are designed for this, the engine, transmission, differential gears and brakes are not.

Another limiting factor that should be clearly borne in mind is that pneumatic truck tires have been satisfactorily perfected only in sizes up to 8 and 9 inches. Larger tires than this are still in the experimental stage.

There are some conditions under which it is wise to change over from solids to pneumatics, even though the truck construction contemplates the use of solids. There may be certain disadvantages as a consequence of the change, but these will be more than offset by certain advantages to be gained through use of the pneumatics. Because of the multiplicity of uses to which motor trucks are put, it is almost impossible to lay down any hard and fast general rule showing the conditions under which pneumatic tires should be used, or under which solid tires would be proper equipment.

Pneumatic tires have certain very definite advantages over solids. It is just as desirable to have all trucks operate on pneumatic tires as it is to have all passenger cars operate on pneumatic. The invention of the pneumatic tire was one of the greatest steps forward in the development of the passenger car, and the pneumatic tire for trucks is as great a step forward in the evolution of motor trucks. There is no doubt that ultimately pneumatics will be the standard equipment for practically all vehicles of this character.

TALC AND SOAPSTONE INDUSTRY.

America leads the world in the manufacture, use and production of talc and soapstone. According to the United States Geographical Survey the output sold in 1918 was 191,477 short tons, having an average value of $10.91 a ton. This was a decrease of 7,000 tons in quantity over 1917, but an increase of more than $200,000. Vermont produces the largest amount of talc, but New York's output, which comes second, is of greater value; California ranks third in quantity and in 1918 more than doubled the output of 1917. The United States produced about 58 per cent of the world's output in 1918 and imported, besides, 11 per cent of all the talc produced by the rest of the world. About 12,000 tons, 96 per cent of the importations, came from Canada and very little was exported. While there is plenty of low and middle-grade talc in the United States, the high-grade talc used for toilet powder, electric insulators and gas burners, comes from Italy, France, and India.

A new source of talc has been found recently in a dike of serpentine in Hartford County, Maryland. The California production is ground talc, found in Inyo and San Bernardino. There it is associated with limestone, and in part has a fibrous structure like that from the Gouverneur district of New York.

Virginia is the greatest producer of soapstone in the world; she shipped more than 15,000 tons in 1918. California also produces some soapstone.

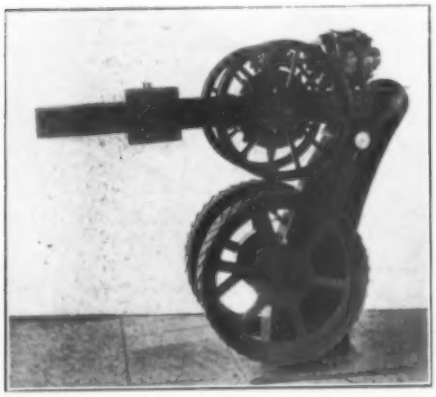
BUSINESS MEN OF MILWAUKEE, WISCONSIN, WHERE THE FOREIGN element is very much in evidence, have formed the American Constitutional League, with Frank R. Bacon, president of The Cutler-Hammer Manufacturing Co., as chairman. The League proposes to be non-sectarian and non-racial in membership and objects; it will devote itself to the work of Americanization in education and in publicity and to opposing all radical doctrines which threaten existing order.

BOLIVIA HAS IMPOSED AN EXPORT TAX OF FROM 2 TO 6 PER CENT on all rubber that leaves its territory.

New Machines and Appliances.

MOTOR DRIVEN TIRE TESTING MACHINE.

This motor-driven tire tester is of the latest design. It is arranged to drive the tires while running against rough surfaced wheels that are provided with cross strips to simulate the conditions encountered on the road. It is equipped with a speedometer giving the miles per hour and the distance traveled.



THROPP TIRE TESTER.

The wearing quality is figured out by means of two large weights that are moved all the way in on the bearing lever to give the same weight as on the front wheels of a normal size car, and all the way out, to give the same weight as on the rear wheels.

The bearings on the wheel shaft are roller bearing type, lubricated with compression grease cups. This machine is built to test 34 by 4-inch tires and is equipped with a 7½ h. p. motor. (Wm. R. Thropp & Sons Co., East State street, Trenton, New Jersey.)

HIGH PRESSURE TIRE RETREADER.

This self-contained sectional tire vulcanizer is designed for effective duty and provided with a large factor of safety. The boiler shell is ¼-inch thick and the crown sheet is 5/16 thick and contains six 1-inch tubes. All boilers are tested to 220 pounds hydraulic pressure and given a thorough steam test before being shipped. Two types of burners are supplied, a gas burner or gasoline burner that generates in less than five minutes and will raise 50 pounds steam pressure in 35 minutes.

TYPE G RETREADER.

The molds are all milled in a special machine built for that purpose and are very smooth in finish. The ribbed tread type of mold being the most popular. The highest grade of equipment is furnished with each mold, including a woven fabric bag, spring bar, socket and ratchet wrench.

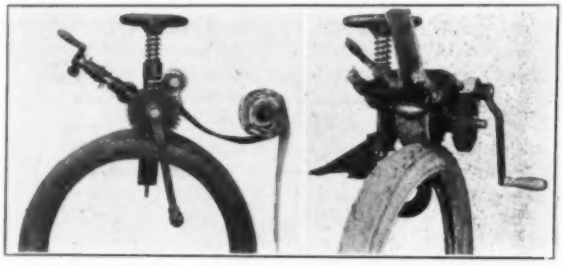
High-pressure retreaders are made in three sizes, type A-G curing 4½ and 5-inch tires; B-G curing 4-inch tires; C-G curing 3 and 3½-inch tires. (Zwebell Bros. Co., Milwaukee, Wisconsin.)

COMBINATION TREAD ROLLER, PEELER AND APPLIER.

This machine combines a tread roller that will not only apply and roll down the built-up tread or "camelback" in one operation but will also peel the old tread from the tire that is to be rebuilt.

It is substantially made, having a heavy frame post on which the head of the machine pivots and swings to one side while applying the tire. The head of the machine is then swung around in place, locked, and the pressure screws adjusted.

As a tread roller it will apply and roll down the raw stock at the same time, forcing all air away from in front and eliminating chances of trapping it, as the pressure is put on at the same time the tread comes in contact with the tire. As a tread peeler it will remove the old or worn tread from a tire in a short time.

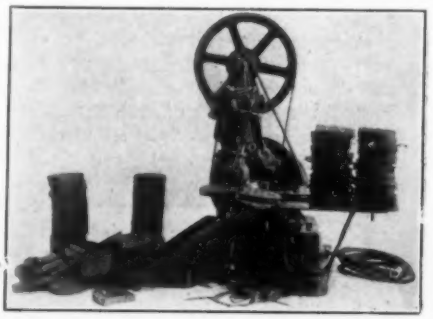


TREAD ROLLER. TREAD PEELER.

The driving power is back-geared "three to one" so that a sufficient pressure can be applied in rolling down the raw stock and power gained for peeling off the old tread. Both tread peeling and tread rolling attachments have regulating springs which automatically adjust the roller to the high and low places, keeping an even pressure on the tread regardless of how unevenly it may be worn or how rugged the non-skid design may be. (The Western Tire & Rubber Works, 321 North Crawford avenue, Chicago, Ill.)

WATER BOTTLE AND FOUNTAIN SYRINGE TRIMMING MACHINE.

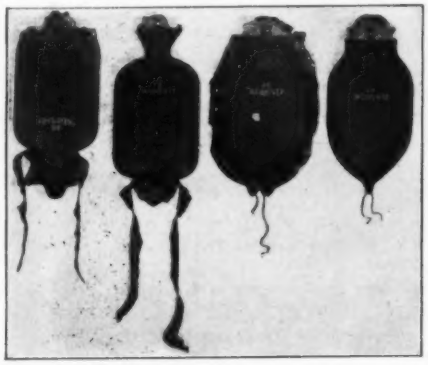
The accompanying illustrations show a water bottle and fountain syringe trimming machine and samples of its work. This machine does not operate automatically.



WATER-BOTTLE AND FOUNTAIN-SYRINGE TRIMMER.

A table extending out from in front of machine, 14 by 16 inches, is held in position by two screws. The screw on the right-hand side fits into a slot in the frame which allows the table to be raised or lowered as if it were on a hinge. An upper and lower guard are provided which cover the cutting edges of the cutters and protects the bags. The two guards are adjustable. The space between them is for the overflow to enter.

In operating, the bag or bottle is laid on the table, and the table raised or lowered to bring the overflow line of the bag level with the point of contact of the cutters. The bags are then moved over the table similar to cloth passing through a sewing machine. The machine is practically fool proof and will remove 90 per cent of the overflow. Here may be seen the actual work performed on the machine. The method used in trimming the first bag shows the trimming was started at the lower corners (the upper corners shown in cut) on a straight line with the side and the overflow removed up to within a half inch of the neck. On the second bottle, the trimming was started about ¾-inch from the neck and the overflow removed up to within ½-inch of the hanger on each side.



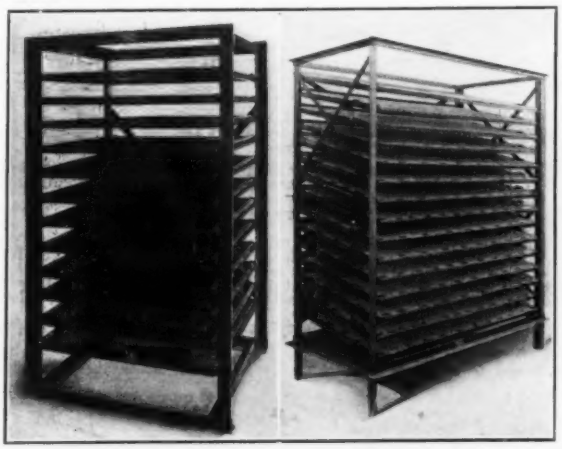
METHODS OF TRIMMING.

In the first method, with a little practice, from 12 to 15 bottles can be trimmed per minute. The second method takes a little more time, but removes more overflow. With more skill the result should be nearly the same. The third shows the syringe bag before being trimmed, and the fourth shows it after being trimmed. About 98 per cent of the overflow has been removed.—(T. W. Morris, 3304 Warren avenue, Chicago, Illinois.)

STANDARD COOLING AND DRYING RACKS.

The rubber stock cooling rack shown herewith is designed to save time, facilitate handling, economize floor space and increase production.

It has a cooling capacity of about 400 pounds of tire stock with each loading, or about 800 pounds per hour. The size is 30¾ by 30¾ by 62½ inches high, receiving 12 removable trays 30 by 30 inches. The trays are 16-gauge perforated steel with corner angles and 2 by 2 inch tray runs and 1 by 1 inch angle well reinforced.

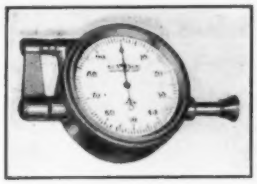


COOLING RACKS. DRYING RACKS.

The drying rack is designed for drying jelutong and pontianak stock, etc., and is particularly adapted for use in drying rooms. Its capacity is about 600 pounds of stock when filled. Its size, 64 by 30 by inches by 7 feet 11 inches high. The corner angles are 2 by 2 inches, and the frames heavily reinforced to receive 15 trays 30 by 60 inches. Tray runs are pitched with the tray stops. The trays are 1 by 1 by ⅛-inch frame of heavy wire mesh, galvanized after weaving. (Chas. W. Carll's Sons, Trenton, N. J.)

RUBBER THICKNESS GAGE.

A most convenient and accurate dial pocket gage for use in measuring the thickness of calendered sheet rubber stock is that shown in the illustration. It is equipped with jaws which have large flat surfaces designed for gaging paper or rubber. It is graduated to read by 0.001 of an inch. The diameter of the dial is 1⅜ inches, and the spindle has a travel of 0.3-inch. (B. C. Ames Co., Waltham, Massachusetts.)



POCKET RUBBER GAGE.

INNER TUBE PATCH BUFFERS.

These devices are recommended for quickly and thoroughly removing chalk, bloom and grease from inner tubes preparatory to the application of rubber patches

These buffers are made in two designs as shown in the illustrations, the Cordell is more effective but the Nugent occupies less space and therefore may be preferred. The principle is the same in both—small sharp-toothed projections that will clean the surface and not cut the tube deeply. (Cordell Manufacturing Co., 709 Pine St., St. Louis, Missouri.)

CORDELL BUFFER.

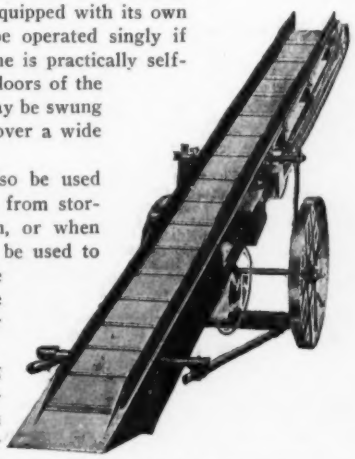
NUGENT BUFFER.

COAL HANDLING CONVEYORS.

The scoop conveyor shown in the illustration provides a convenient, efficient and flexible arrangement for handling coal or similar material. For example: five machines may be used to unload coal from hopper bottom cars direct to a storage pile. Each is equipped with its own electric motor and can be operated singly if desired. The first machine is practically self-feeding from the hopper doors of the car, and the other four may be swung around at any angle to cover a wide storage area.

These machines can also be used to convey the coal direct from storage pile into boiler room, or when desired, one machine can be used to load an electric storage battery truck to convey the coal directly into the boiler room.

The advantage of using the scoop conveyor to unload hopper bottom cars is that no track hopper or pit is necessary, making it possible to unload cars at any point along the track. (Portable Machinery Co., Inc., Passaic, New Jersey.)



PORTABLE SCOOP CONVEYOR.

SANDSTONES FOR RUBBER WORKERS.

One of the best forms of whetstones for keeping in condition the hand knives used in ordinary rubber cutting is the old-fashioned sandstone which whets the steel without glazing as

RUBBER KNIFE SANDSTONE.

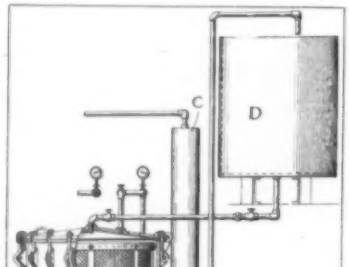
some of the harder sharpening stones do. It also has the merit of being inexpensive enough to permit of extensive factory distribution wherever cutting is done by hand. (Scranton Whetstone and Abrasive Wheel Co., Scranton, Pennsylvania.)

MACHINERY PATENTS.

APPARATUS FOR PRODUCING WATERPROOF FELT.

THE object of this device is to produce waterproof fedt suitable for a substitute for leather in the manufacture of soles, suitcases, trunks and the like.

The container *A* is provided with a specially arranged screen *B*, between the convolutions of which the rectangular sheets of felt, one quarter of an inch thick, are placed. When a vacuum is created in the container by means of a pump connected to the vacuum tank *C*, the waterproofing material is admitted to the container from the tank *D*, and impregnates the felt. After a short period the waterproofing material is forced back into the solution tank, the impregnated felt sheets are removed from the container, pressed and submitted to a drying process. (Charles T. Dickey, Elizabeth, assignor to John J. Voorhees, Jersey City—both in New Jersey. United States patent No. 1,315,763.)



FELT IMPREGNATOR.

OTHER MACHINERY PATENTS.

THE UNITED STATES.

NO. 1,323,573. Repair vulcanizer. P. P. Bongio and E. Stephenson, assignors to Two Cure Retread Mold Co.—all of Fort Worth, Tex.

1,323,606. Apparatus and process for impregnating and coating fabric. T. Midgley, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass.

1,324,016. Tire maker for tire-building machine. W. B. Harsel, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

1,324,170. Masticator. C. Pletscher and L. C. Reese, assignors to Werner & Pfleiderer Co.—all of Saginaw, Mich.

1,325,578. Bead-trimming machine. E. D. Putt, assignor to The Firestone Tire & Rubber Co.—both of Akron, O.

1,325,608. Last for rubber boots or shoes. H. W. Bastian, Summit County, assignor to The Firestone Tire & Rubber Co., Akron—both in Ohio.

1,325,670. Collapsible sectional tire core. F. H. Grove, E. M. McCurry, and G. R. Bilger, assignors to The Banner Machine Co.—all of Columbiana, O.

1,325,898. Mold for vulcanizing masks. M. A. Marquette, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass.

1,325,908. Trimming device. L. B. Pierson, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,326,294. Apparatus for separating tires from cores. J. J. Shea, assignor to The Hartford Rubber Works Co.—both of Hartford, Conn.

1,326,357. Apparatus for coating tire rims. R. McClenathen, Cuyahoga Falls, and G. B. Heffelfinger, Akron—both in Ohio, assignors to Kelly-Springfield Tire Co., New York City.

1,326,375. Rubber-working machine. I. H. Spencer, West Hartford, assignor by mesne assignments to The Spencer Turbine Co., Hartford—both in Conn.

1,326,465. Automatic tire-tube deflater. C. J. Powell, Romney, W. Va.

1,326,674. Tire core. E. Lookholter, Chicago, Ill.

1,326,675. Tire core. E. Lookholter, Chicago, Ill.

1,326,874. Apparatus for placing tires in molds. C. Macbeth and E. Sullivan, Birmingham, assignors to The Dunlop Rubber Co., Limited, Westminster, London—both in England.

THE DOMINION OF CANADA.

194,352. Apparatus for making pneumatic tire casings. J. L. G. Dykes, Chicago, Ill., U. S. A.

194,353. Tire vulcanizer. J. L. G. Dykes, Chicago, Ill., U. S. A.

194,462. Tongs for lifting tire cores. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of O. Grosvenor, New York City, U. S. A.

195,481. Manufacture of tire casings for pneumatic tires. E. Hopkinson, New York City, U. S. A.

194,653. Tire vulcanizer. W. B. Burke, Cleveland, O., U. S. A.

194,659. Tire abrader. F. N. Cordell, St. Louis, Mo., U. S. A.

194,758. Apparatus and method for making jar rings. The Anchor Cap & Closure Corp., assignee of H. E. Townsend—both of Brooklyn, N. Y., U. S. A.

194,931. Construction of pneumatic tire casings. W. L. Mitten, Davenport, Ia., U. S. A.

195,095. Apparatus for making tires. G. F. Knight and B. M. Frank, co-inventors, both of Canton, O., U. S. A.

195,131. Tire abrader. F. N. Cordell, St. Louis, Mo., U. S. A.

195,303. Apparatus for drying tire beads. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of G. McNeill, Detroit, Mich., U. S. A.

195,304. Rubber mixer. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of H. A. Welton and H. J. Hoyt, co-inventors, Detroit, Mich., U. S. A.

195,313. Apparatus for making tire casings. The Federal Rubber Co., Cudahy, assignee of A. A. Frank, Milwaukee—both in Wisconsin, U. S. A.

195,368. Tire gage. H. L. West, assignor of 1/3 to B. L. Cress—both of Red Cliff, Colo., U. S. A.

195,501. Apparatus for forming tires. J. T. Lister, Cleveland, O., U. S. A.

195,649. Guard for rolls of rubber mills, etc. L. Gaisman, assignor of ½ to S. Dreyfus—both of Manchester, Lancaster, England.

THE UNITED KINGDOM.

132,373. Tapping knife. S. Johno, 401 North Bridge Road, Singapore, S. S.

132,409. Outfit for inflating tires. W. T. Thorne, The Butts Garage, Worcester.

132,596. Air pump actuated by depression of tread of pneumatic tire passing over the ground. W. G. Cumming, 93 Lewes Road, Brighton, Sussex.

132,789. Mills for grinding rubber. Naamlooze Vennootschap Verschure en Co.'s Scheepwerf en Machinenfabriek, Amsterdam, Holland. (Not yet accepted.)

132,814. Apparatus for dipping rubber articles and drying them by heating mandrel from within. A. Boecler, 3 Fabriksgatan, Malmö, Sweden. (Not yet accepted.)

133,155. Apparatus for making solid rubber band tires. C. and A. E. Burnett, Sunnybank, Trowbridge, Wiltshire.

133,325. Apparatus for trimming tire fabric at inner edges of beads, etc. Firestone Tire & Rubber Co., assignee of E. D. Putt, 330 Russell avenue—both in Akron, O., U. S. A. (Not yet accepted.)

133,647. Loom for weaving pneumatic-tire casings, etc. E. Ingham, 302 Indiana avenue, Washington, D. C., U. S. A.

133,795. Apparatus for making rubber band tires of the type in which layers of ebonite are built up on a metal band, etc. St. Helens Cable & Rubber Co., Arpley, and B. Lee, Rose Cottage, Cow Lane, Sankey—both in Warrington, England.

133,808. Apparatus for recessing rubber. W. H. Phipps, 57 Wick Road, and W. T. Hooper, 71 Repton Road—both in Brislington, Bristol, England.

133,914. Wheel for severing or cutting vulcanite by grinding. Sterling Telephone & Electric Co., 210 Tottenham Court Road, and C. Harrison, 60 Rostella Road, Tooting—both in London.

134,584. Apparatus for shaping solid tires. C. and A. E. Burnett, Sunnybank, Trowbridge, Wiltshire.

THE FRENCH REPUBLIC.

493,604. Apparatus and process for reclaiming rubber. The Dunlop Rubber Co., Limited.

PROCESS PATENTS.

THE UNITED STATES.

NO. 1,323,706. Manufacture of inner tubes. C. Macbeth, Birmingham, assignor to The Dunlop Rubber Co., Limited, Westminster, London—both in England.

1,323,976. Application of half-sole or repair tires. C. C. Gates, Denver, Colo.

1,324,178. Insertion of bristles in rubber pads. W. T. Sherman, Troy, assignor by mesne assignments to Henry L. Hughes Co., Inc., New York City—both in New York.

1,324,850. Manufacture of corrugated rubber articles. F. T. Roberts, assignor to The Paramount Rubber Co.—both of Cleveland, O.

1,325,465. Manufacture of reinforced pneumatic tires. C. T. Dickey, Elizabeth, assignor to J. J. Voorhees, Jr., Jersey City—both in New Jersey.

1,325,716. Manufacture of portions of a garter. R. Gorton, Brookline, Mass.

1,326,630. Waterproofing of garments, including seams and stitching. W. S. Barker, Cambridge, assignor to A. J. Tower Co., Boston—both in Mass.

RATES HAVE BEEN FIXED BY THE UNITED STATES SHIPPING BOARD for shipments of tires from Pacific ports to Hongkong, Shanghai, Kobe, Yokohama and Manila, effective December 15, 1919. Rubber tires, pneumatic or solid, in packages, will pay at ship's option 31¼ cents per cubic foot.

New Goods and Specialties.

CORD TIRE WITH NON-SKID TREAD.

ONE of the newer cord tires is illustrated herewith, having the appearance of strength and durability and being provided with an attractive non-skid tread. This tire is hand-built and carries with it a mileage guarantee of 10,000 miles, provided the purchaser has complied with the recommendations of the manufacturer with respect to style of rims used, amount of air pressure, weight of load, etc. (The Biltwell Tire & Rubber Co., Akron, Ohio.)

BILTWELL CORD.

"HILO" FLEXIBLE VARNISH FOR RUBBERIZED FABRICS.

Automobile topping and similarly rubberized fabrics are expected to endure long and trying service under a wide range of climatic exposure from wet to dry and cold to hot, as well as sharp folding and mechanical abrasion. Such service conditions are particularly severe on the varnish surface coating which acts both as a lustrous finish and protector to the rubber composition and as water proofing.

A standard finish for this purpose is "Hilo" varnish which has found extended favor with makers of automobile topping because of its flexibility and resistance to cracking under service conditions. (Hilo Varnish Corp., Brooklyn, New York, and Chicago, Illinois.)

A COVERING FOR PORTABLE ELECTRIC CORD.

A new kind of covering for portable electric cord is woven like fire hose in thick, heavy strands, with each strand of the warp locked in place by the strands of the weft that run around the cord horizontally. After being woven, this heavy cord is impregnated with a high grade of rubber compound which insulates it far beyond the ordinary requirements and makes it adapted to the use of shipbuilders, miners, manufacturers, railroad men, etc. (Tubular Woven Fabric Co., Pawtucket, Rhode Island.)

"DURACORD" ELECTRIC CORD.

A NEW BICYCLE TIRE.

Simultaneously with the celebration of the silver anniversary of the pioneer manufacturer of bicycle tires, the same concern is putting on the market a new tire for the two-wheeled roadster which bids fair to come into its former popularity with both sexes.

"EVERLASTER TWIN GRIP" TIRE.

This bicycle tire is all white and is expected to stand hard service, while its resiliency, it is claimed, will protect the rider and his wheel against hard road shocks. The tube is built around two plies of long-staple motorcycle fabric and is heavily frictioned with the white rubber. (Kokomo Rubber Co., Kokomo, Indiana.)

THE "SUCTION GRIP" LADDER FOOT.

Among the various safety feet for ladders is one with suction grip for smooth floors. It is one of a set of different kinds of safety feet that this manufacturer has devised to adapt ladders to the different kinds of surfaces on which they are to be used. This particular foot has a rubber suction cup on the bottom which makes it grip the floor more firmly when increased weight pushes against it. It is attached by a bolt to the malleable iron holding frame on the ladder and is interchangeable with the others of the set which includes a steel point for rough wood floors, a point based on the abrasive principle for concrete floors, and the one shown in the illustration ready for attachment. (Chesebro, Whitman Co., Inc., First avenue, corner of 64th street, New York City.)

LADDER GRIP.

A CONVENIENT TIRE TOOL

A self-adjustable tire tool that works with a rack and pinion movement is illustrated here. There is a reversible ratchet on the handle and a rear pawl which engages with the ratchet wheel when the front pawl is in neutral position. By working the handle back and forth until the rim is collapsed the desired distance, the tire will come off easily. The new tire is adjusted with equal ease. (The Trexler Co., 1418 Walnut street, Philadelphia, Pennsylvania.)

THE "TREX" TIRE TOOL.

"VULCANIZE IT."

A patch material for repairing automobile, motorcycle, and bicycle inner tubes and casings; hot-water bottles; rubber boots, shoes, gloves, and coats; garden hose; and bath-room and hospital rubber goods of all kinds is called "Vulcanize It." It is self vulcanizing and is applied with a chemical compound which comes with it. (Allied Manufacturers Corp., 38 South Dearborn street, Chicago, Illinois.)

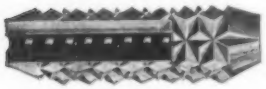
A BLACK AND GRAY CORD TIRE.

The cord tire with black tread and gray side-walls shown in the accompanying picture is one of the newer ones to appear on the market. It is made by the single-cure wrapped process by a secret method of construction that obviates the necessity of using air-bags, and each separate cord is first impregnated with high-grade rubber, then heavily coated with rubber, the first ply being also coated with a special rubber compound. (Bergougnan Rubber Corp., Trenton, New Jersey.)

BERGOUGNAN CORD TIRE.

REINFORCED PEDAL RUBBER.

A new rubber for application to motorcycle pedals has been patented by the inventor under date of October 28, 1919. It consists of a pedal cover of high-grade red or gray rubber, with knurled surface, reinforced by a coil of tempered steel wire running its length. The usual round hole is provided, but this pedal rubber can be had with a square hole if preferred. (Continental Rubber Works, Erie, Pennsylvania.)



"VITALIC" PEDAL RUBBER.

"KWIKFIX" RUBBER CEMENT.

The United States Patent Office has granted registration of the trade mark "Kwikfix" to designate a rubber compound used as cement. The application was Serial No. 117,016, noted in our issue of July 1, 1919, and the patent is No. 127,446, granted November 11, 1919. (Alick Merriman, 26 South street, Freehold, New Jersey.)

TWO MORE CORD TIRES.

Two new cord tires, one of which is a super-oversize, are pictured herewith. The Martin super-oversize tire, it is claimed, has unusual resistance to road shocks, bruises, overloading, etc.

MARTIN SUPER CORD.

The "Mono" cord tire is a pneumatic and is guaranteed free from imperfections in material and workmanship if used under reasonable conditions, with proper rims and pressure. (The Martin Tire Corp., 51st street and Sixth avenue, New York City.)

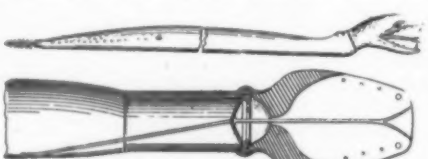
"MONO" CORD.

STANWOOD HEEL PLATE.

In our issue of January 1, 1919, we described an accelerator foot-rest and in our issue of September 1, 1915, a step-plate, both produced by the same manufacturer. The step-plate now has a companion in a heel-plate intended for use back of the accelerator foot-rest. This heel-plate is smaller than the step plate, but, like that, comprises a perforated metal plate entirely covered with rubber and provided with a series of longitudinal ribs firmly molded to the metal plate. It is four inches wide and eleven and one-half inches long. This plate, which is intended to furnish a stable position for the heel when operating the pedal, may also be used as a toe and heel guard by setting it in a vertical position on the running-board shield. (Stanwood Equipment Co., 307 Plymouth Court, Chicago, Illinois.)

A RUBBER SNAKE.

Rubber is a favorite material for use in making objects to deceive the eye into believing them to be the real thing, and it is utilized in the manufacture of the figure toy shown here. The body is elongated and hollow, and the head has the mouth wide open. A flexible diaphragm operates the tongue, connected with a rubber band or light spring within the body. By squeezing the body air is forced against the diaphragm and the tongue projected, producing a very life-like representation of a snake. (John W. Clements, Dalton, Georgia.)



RUBBER TOY SNAKE.

A NEW CASING PATCH.

For the repair of cord or fabric ruptures a practical adhesive casing patch has been devised, consisting of four plies of high-grade inner-tube stock and one of rubberized stockinet. Between the third and fourth plies is set a piece of flexible wire mesh cut on the bias. The illustration shows the patch before it is molded and vulcanized, after which one side is coated with cement, protected by a gauze liner. The armored casing patch is stuck smoothly over the rupture so that both ends of it overlap the bead of the tire. It can be used as a blow-out patch. (Squires Tire & Rubber Co., Inc., Long Island City, New York.)

CORD TIRE PATCH.

"FIRO" SUPERHEAT PACKING.

A packing for which it is claimed that it will not burn or char in a joint or squeeze out when the bolts are drawn up is called "Firo." It is made of long, strong fibers of asbestos, with a suitable binder, and is formed into sheets under immense hydraulic pressure. It is supplied in sheets 1/32-inch, 1/16-inch, and 1/8-inch thick, weighing 3¼ pounds, 6½ pounds, and 13 pounds, respectively.

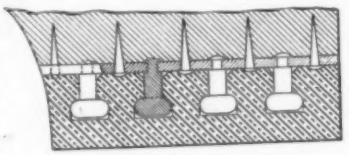
"TRIPLE DIAMOND" RUBBER BELTING.

A new kind of rubber belting is made of heavy, specially woven belt duck of considerable tensile strength. It has the plies united by rubber friction which the manufacturer claims will not separate in service. The surface is high-grade friction. This brand takes its name from the trade-mark, three overlapping diamonds, with lettering, stamped on the material.

Both the "Firo" superheat packing and the "Triple Diamond" rubber belting are made by the same concern. (New York Belting and Packing Co., 91 Chambers street, New York City.)

DETACHABLE HEEL.

A detachable and interchangeable rubber heel is shown in cross-section in the accompanying drawing. It is intended to enable a person to attach his own heels without the necessity for visiting a shoemaker whenever it is desired to substitute another heel for the one on the shoe. The lower section of the heel is of rubber, having molded sockets for the accommodation of metal studs which extend from the metal plate that attaches to the heel of the shoe. (George Schrade, 311 Stratford avenue, Bridgeport, Connecticut.)



PATENTED REMOVABLE HEEL.

SURE FOOTING ON THE RUNNING BOARD.

A new style of safety step-plate is so planned that a red rubber insert can be made in the center, having the name of any popular make of car molded therein. The ribs run out from the center like the sun's rays, and the mat provides a sure footing on the running board of the car, in addition to keeping clean the inside. (Tyler Manufacturing Co., 64 Pearl street, Boston, Mass.)

TYPE D "TYMCO" STEP PLATE.

INTERESTING LETTERS FROM OUR READERS.

TO THE EDITOR:

DEAR SIR:—I was painfully surprised to read your answer to Mr. McCormick's query on page 148 of the December issue of "THE INDIA RUBBER WORLD." Whatever his motive may have been in writing you, it betrays a low grade of editorial intellect for you to lose your temper as you did. And your slur on the Chinese is particularly stupid. China is a great nation with unlimited commercial possibilities for Americans. Obviously we have nothing to gain by antagonizing the Chinese, but ought to do all we can to make our relations with them even more friendly than they have been.

PAUL H. SCHMIDT.

Milwaukee, Wisconsin, January 3, 1920.

ACCELERATOR INFORMATION.

TO THE EDITOR:

DEAR SIR:—If in keeping with your policy, I am wondering if you will be kind enough to let me have an expression from you on the relative strength of the following organic accelerators as applied to the same compound, the known factors being the compound and the cure:

(1) Aniline oil
(2) Thiocarbanilide
(3) Hexamethylene-tetramine.
(4) Paraphenylene-diamine.

As a concrete example, if the following formula were used taking hexamethylene-tetramine as a standard, using say one pound, what amounts of the other accelerators above mentioned, each in turn, would be required to replace the "Hexa" for the same cure:

Sulphur	2 pounds 8 ounces
Hexa	1 pound 0 ounces
Zinc oxide	5 pounds 0 ounces
Smoked sheets.....	91 pounds 8 ounces
	100 pounds 0 ounces

Cure: Say, 1 hour and 45 minutes at 45 pounds.. If this formula and cure will not suffice, then any one which you might be willing to suggest will be greatly appreciated.

What method would you recommend as being the most satisfactory for treating crude rubber (smoked sheets) with paraphenylene-diamine?

If a solution of paraphenylene-diamine is used:—

(a) What strength is generally required?
(b) What length of time would be required to treat the rubber?
(c) What temperature would you recommend to keep the solution while treating rubber?
(d) About what percentage of para-phenylene-diamine would the rubber contain after treating and being air-dried?

X.

A friendly rubber chemist comments upon the foregoing as follows:

A categorical answer to the first question is exceedingly difficult, for the reason that it presupposes a method of determining equal conditions of cure. In other words, it involves a definition of the so-called "optimum" cure, about which so much has been written and so little agreed upon. I presume that your correspondent would regard similar conditions of tensile strength and stretch as being indicative of the same cure, as they doubtless are from the standpoint of the practical rubber worker.

With this definition of cure then, the answer to your correspondent's question is, "It can't be done." I don't think the addition of any amount of aniline oil to the formula stated will bring about a tensile strength equal to that obtainable by means of the 1 per cent hexa. I also believe that it would be difficult to duplicate with hexa the physical tests obtained with paraphenylene-diamine. In other words, no quantitative equivalent relationship exists for the four accelerators in question.

The situation is precisely similar in the case of the inorganic accelerators. Supposing one were asked to state the numerical relationship between white lead, litharge, lime and magnesia. It can't be done.

In the case of the organic accelerators, it can, however, be stated with accuracy, that their order of potency is in accordance with the order in which they are stated in letter, aniline oil being the least powerful and paraphenylene-diamine being the most so.

Regarding the second series of questions as to the conditions of treating crude rubber with paraphenylene-diamine, I cannot be of much assistance, for the reason, very frankly, that I do not know the answer to them. I have had very little experience with paraphenylene-diamine because I feel that owing to its frightfully poisonous nature, it has no place in the rubber factory. Whenever I am asked regarding the advisability of using this accelerator, I am always tempted to quote Punch's advice to those about to get married: "Don't."

CHEMIST.

FROM A WELL-KNOWN RUBBER EXPERT.

I have for some time been trying to learn the use of paraphenylene-diamine, which is handled successfully by only a few. So far I am not sufficiently informed to give information worth while.

Regarding aniline oil, this material is fast being replaced by other materials because of its bad effect upon the people who handle it. It produces inefficiency from the office to the stable. Under the same conditions these accelerators I think would be used in about the same quantity except the fourth or last mentioned.

Hexamethylene-tetramine.—The results are very good, but it produces an itching that is unbearable.

Thiocarbanalide is also very good when clean, but much of it contains free nitro benzol, which, of course, is dangerous and should not be used. It is used in about the same quantity as the others, but is made safe by careful supervision and cleaned and kept clean throughout. Have had the best of success with it.

Some manufacturers use sulphuric acid in making a material they call by the name of thiocarbanalide. It has been proved to be detrimental in same instances by weakening the fabric, causing blow-outs.

HE ISN'T.

TO THE EDITOR:

DEAR SIR: The alleged confessions of a certain big gambler as chronicled in some of the daily papers describe the fleecing of a wealthy man entitled the "Rubber King." Who is he?

Boston, January 1, 1920. I. I. REYNOLDS.

(There are really scores of "rubber kings" in the preferred imaginations of dark-alley word-blacksmiths. Any man of wealth or prominence in the world is eligible. All that is necessary is a paper that will print and pay for the stuff—a few facts (or fancies), a so-called rubber king, unnamed of course, and much white paper is ruined.—THE EDITOR.)

WITH REGARD TO SOLARIZATION.

TO THE EDITOR:

DEAR SIR:—A rubber man in the East sends me a compound for blue rubber that, as I understand it, is to be coated on cloth, then wrapped in muslin and vulcanized in the roll. He says, dry heat. Possibly he means that it should be hung or festooned in a hot-room. The compound calls for rubber, zinc oxide, ultramarine blue and sulphur. The amount of sulphur used is one ounce to the pound of rubber. Now, I can easily put the mixture in solution and spread it, but I am not sure that I wish to make a dry heater.

Out here we have moisture most of the time. I have been told that sunlight will cure surface goods. Is that so, and is the compound just the same as for the dry heat? How can I try this out?

JOHN J. ADAMS

Pasadena, California.

(It is perfectly feasible to cure surface goods by exposure to sunlight. It is commonly called "solarizing." Use ½ ounce of sulphur instead of 1 ounce. Make the solution thin and run

several coats. A little experimenting will give you expertness in the sun cure.—The Editor.)

NEW TRADE PUBLICATIONS.

"THINGS THAT INTEREST FIRESTONE SHAREHOLDERS" IS THE title of a handsome 16-page brochure, bound in boards, which outlines the rubber situation and the tire demand in America and presents the outstanding features of the accomplishments, future plans, plant enlargements, and organization of the Firestone Tire & Rubber Co.

THE APSLEY RUBBER CO. AND THE MIDDLESEX RUBBER CO., BOTH of Hudson, Massachusetts, have issued their price lists of rubber boots and shoes for the season of 1920. These cover the well-known Apsley, Roch-Hill, Granger, Harvard, Deliverer, Hudson, Marlboro and Middlesex brands. As in the lists of other firms, prices average 15 to 20 per cent above those of last season, the advances being due chiefly to the higher costs of cotton textiles and labor.

THE BEACON TIRE CO., INC., BEACON, NEW YORK, ARE ISSUING monthly a four-page trade folder, 9 by 12 inches, printed in red and black, entitled "The Beacon Light."

THE WESTINGHOUSE ELECTRIC AND MANUFACTURING CO. has issued an illustrated pamphlet, "Westinghouse Opportunities for Technical Graduates," which gives in detail the educational system devised by the company for training the graduates of technical schools in the various kinds of work it requires of them. It gives a list of 99 American and 14 foreign universities and technical schools which have contributed 5,000 graduates to its force.

THE GILBERT & BARKER MANUFACTURING CO., SPRINGFIELD, Massachusetts, has issued a new and handsomely illustrated 28-page catalog of its oil storage systems, including tanks and measuring pumps. The outfits illustrated and described are in general use in factories, power plants and garages where lubricating oils and gasoline are handled.

"ASHLAND CHORDS" IS THE TITLE OF ONE OF THE LATEST HOUSE organs, "The Keynote of Ashland Tire and Rubber Company Harmony," as it is designated in the sub-title by its publisher, The Ashland Tire & Rubber Co., Ashland, Ohio. The first number, dated January, 1920, contains an account of the company's organization and progress in building, plans for selling and export, lists of officers and branch offices, the company's trade mark and a picture of the factory as it will look on completion.

HOLIDAY GREETINGS.

ONCE MORE HAS THE INDIA RUBBER WORLD received from the rubber and allied trades the cordial expressions of good will and appreciation, with kind wishes for the New Year. This publication takes this opportunity to return its thanks and to assure these friends that it heartily reciprocates their good wishes for progress and prosperity in this new year, which seems so full of promise for the rubber trade above all.

CALENDARS.

A beautiful and artistic water-color of a restful country scene adorns the calendar sent by Tyson Brothers, Inc., of Woodbridge, New Jersey, manufacturers of rubber substitutes and chemicals.

Another vivid war scene, "The flag that has never known defeat," representing boys in khaki going over the top, marks the calendar issued this year by Elmer E. Bast, Chicago, Illinois, manager of the Acme Belting Co., and of the United and Globe Rubber Co., Trenton, New Jersey.

Undoubtedly American is the strong face of Sachem Monatiquot on the handsome calendar of the Monatiquot Rubber Works Co., of South Braintree, Massachusetts, for which we are indebted to Merton A. Turner.

From Manchester in England and the Rubber Regenerating Company at Trafford Park comes a fine reproduction of Seymour Lucas's painting, "A Whip for Van Tramp," showing the seventeenth century improvements in naval architecture.

A restful view of woods and river in color, "The Land of Dreams," adorns the calendar of F. E. Woodward & Sons, Lachine, Province of Quebec.

The J. H. Stedman Company, scrap rubber, of South Braintree, Massachusetts, revives pleasant memories of New England by decorating its calendar with a fine photograph of the "Old Town Mill" at North Scituate.

A handsome photograph of some of their buildings illustrates the large, decorative calendar of the Pierce Co., East Rochester, New York.

Large and instructive photographs of the remarkable work turned out by the Wellman-Seaver-Morgan Co., Cleveland, Ohio, builders of rubber and other machinery, marks the clear and practical calendar it issues.

Lockwood, Greene & Co., Boston, Massachusetts, illustrated their 1920 calendar with views of many buildings and other concrete constructions erected by the engineering firm throughout the country.

Pictures of the many diversified products of the General Electric Co., Schenectady, New York, from an electrified railroad to a new lamp bulb, illustrate the large and useful calendar which the company issues.

The Armstrong Rubber Co., Garfield, New Jersey, takes its super-size tire as model for both the shape and size of its striking calendar.

An elegant, enamelled, metallic frame backed with enameloid gives the American Zinc, Lead & Smelting Co.'s AZO calendar the appearance of permanence. The unusually helpful calendar for 1920, fastened by an ingenious zinc screw arrangement, can come off and make room for 1921 when the time comes.

An attractive young person brightens the calendar of the L. J. Mutty Co., Boston, Massachusetts, manufacturer of automobile top fabrics.

From F. R. Henderson & Co., Inc., New York City, in paper of crude rubber, comes a handsome, leather-covered, adjustable desk calendar.

George Borgfeldt & Co., New York City, importers, send a calendar of celluloid with convenient scales.

The H. F. Taintor Manufacturing Co., New York City, dealer in whiting, sends a card calendar.

The New Jersey Rubber Co., Lambertville, New Jersey, manufacturers of reclaimed rubber, again send us their very convenient desk calendar.

A pretty girl at the wheel of a motor car attracts the eye to the calendar issued by the Katzenbach & Bullock Co., New York City, manufacturer of chemicals and colors.

SOUVENIRS.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, through William H. Easton, sends a leatherbound, gilt-edged diary, containing useful tables and maps.

The Birmingham Iron Foundry, Derby, Connecticut, issues a leather-bound pocket memorandum book, provided with helpful tables.

The Morse Chain Company, Ithaca, New York, sends a leather-bound pocket diary with interesting information regarding its products.

John Royle & Sons, Paterson, New Jersey, makers of rubber and other machinery, send again their little leather-bound diary, with its many helpful tables and unusually convenient little maps.

From the Xylos Rubber Co., Limited, reclaimers of rubber, Trafford Park, Manchester, England, comes a handsome leather pocketbook, which holds also a booklet with detachable leaves for memoranda.

H. Muehlstein & Co., New York City, dealers in scrap rubber, provide again this year a handsome Russia leather satin-lined pocketbook for bank notes.

THE OBITUARY RECORD.

PRESIDENT OF THE GOODYEAR RUBBER INSULATING CO.

THEODORE WHITNEY BLAKE, president of the Goodyear Rubber Insulating Co., New York City, and also of the Whitney Blake Co., New Haven, Connecticut, died suddenly at his winter residence, 1067 Fifth avenue, New York City, on November 27, 1919, aged 54 years.

Born in Oakland, California, May 3, 1866, the son of Professor William Phipps Blake, mining engineer and state geologist, he came of an illustrious ancestry. His great-great-uncle was Eli Whitney, inventor of the cotton gin. His great-uncle, Eli Whitney Blake, invented the Blake stone crusher used all over the world today. His great-grandfather, Jonathan Mix, invented the elliptical spring for carriages and wagons. These are but a few of the inventions this gifted family gave to the world.

As a boy, Mr. Blake was educated at the Hopkins Grammar School, New Haven, Connecticut, his home being in that city. He graduated from the Sheffield Scientific School, Yale University, Class of 88, as one of the "Honored Ten," because he had performed some splendid original experiments in chemistry.

Beginning work with the American Bell Telephone Co. in New York City, he rose rapidly from one position to another, then went to Stone & Webster's in Boston, Massachusetts. From there he went to The National India Rubber Co., Bristol, Rhode Island. Then he started the Goodyear Rubber Insulating Co., in New York City, he and F. S. Minott becoming partners. By his own energy and ingenuity he built this up from a small concern into the business it is to-day, and in 1912 he founded The Whitney Blake Co., at New Haven, Connecticut.

In 1900 he married Lillian Kaisley, daughter of Major Kaisley, U. S. A., and is survived by her, a daughter, Charlotte Hayes Blake, and a son, Kaisley Blake.

A man of remarkable energy and enthusiasm, broad vision and high ideals, clear judgment and unfailing optimism, ingenious with machinery and resourceful in its practical application, he was of the highest type of American business man. In New Haven, where most of his home life was spent, he was public spirited and associated with all that stood for real progress. Greatly did he love humanity, and deeply was he loved in return.

A CHICAGO TIRE DEALER.

Frank A. Williams, president of the Carlsten-Williams Co., Chicago, Illinois, well-known dealers in tires, died of pneumonia on December 18, 1919. He was born in Chicago in 1883 and had a public school education. At thirteen he entered the service of the Hartford Rubber Works as an errand boy and worked his way up until the company was absorbed by the United States Tire Co., in 1911. He then helped to organize the Carlsten-Williams Co., of which he was president from the beginning.

SPECIALIST IN INDUSTRIAL RELATIONS.

George Weston, a brother of Joseph C. Weston, vice-president of the Ajax Rubber Co., Inc., New York City, died in Philadelphia, January 7, 1920, after a brief illness. Mr. Weston was a well-known engineer, and a specialist in railway valuation and industrial relations. His recent paper on "The Adjustment of Industrial Relations," which appeared in the technical and lay press, earned for him well-merited recognition.

KNOWN TO MANY RUBBER MANUFACTURERS.

Word comes from Germany of the death in 1917 of Professor George S. Atwood, for a long time secretary of the American Association of Commerce and Trade in Berlin. Professor Atwood was an American of New England, and at one time one of the faculty of Bowdoin College, Maine.

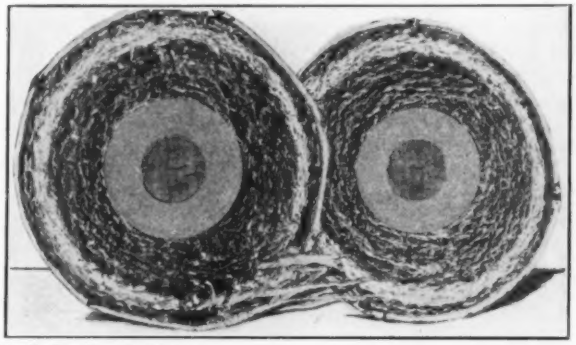
In 1906 he went to Germany as a teacher of English. He married and settled in Berlin, later being instrumental in founding the very excellent association of which he was secretary.

RUBBER IN BASE BALLS.

The actual manufacture of a ball begins with the formation of a piece of cork into a piece about the size of, and resembling, a marble. These pieces are previously examined and weighed and those not up to the required specifications are discarded. In the meantime, in another part of the factory, rubber is being molded into hemispheres that enclose the cork center, and are vulcanized.

The center is now ready for winding with wool yarn, the wool having been imported from Austrialia in the raw state in bales and put through the various operations of yarn making. The gage of the yarn and the tension under which it is wound must be exact, otherwise the ball will exceed the proper size.

When the wool yarn has been wound to almost the regulation size of the ball it is finished off with a winding of strong cotton thread, and an application of rubber cement given. The ball is



(A. G. Spalding & Bros.)

BASEBALL WITH CORK AND RUBBER CENTER.

now ready for its cover, which is sewn on by hand. The sewers, who work with awl and the strongest cotton thread, stretch on the two pieces of horsehide, the latter having been in preparation for at least sixteen weeks, and it is then given a final inspection before the box is sealed.

Some of the details that enter into the making of a baseball will be of interest, for instance: the cover measures approximately 25 square inches and is cut with special dies, only the best part of the horsehide being used. The length of the blue and white wool yarn windings, if stretched out in a single string, would measure over 400 yards, nearly a quarter of a mile.

Although the ball in a general way has followed the same specifications for many years, it was not until 1910 that the cork center was introduced which has since justified all the claims made for it.

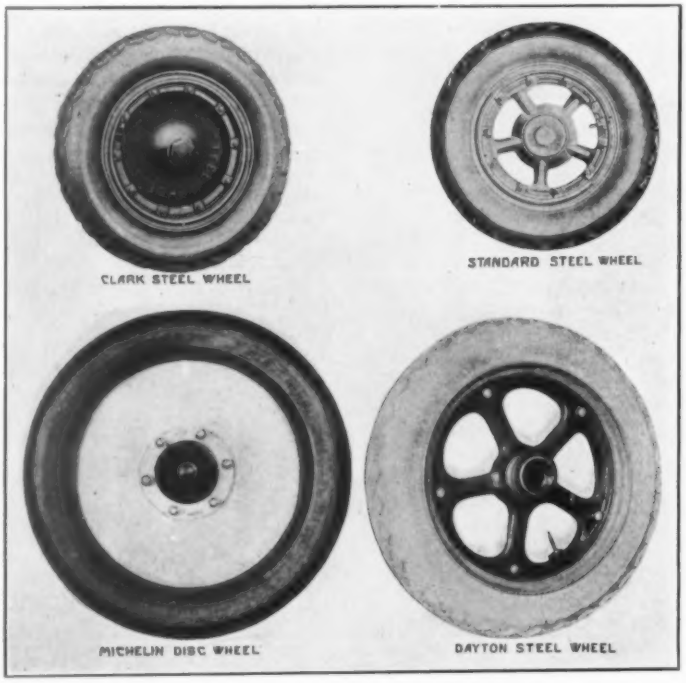
To assert that too much rubber in a ball would tend to make it dead seems ridiculous, but such was the case, and the remedy was discovered in the introduction of a small pieec of cork the center of what heretofore had been a solid piece of rubber. ("Spalding's Journal of American Sports.")

PENANG, DURING THE ELEVEN MONTHS ENDED NOVEMBER 30, 1919, exported to Great Britain 208,115 pounds of crude rubber and to the United States, 121,734 pounds.

The National Automobile Shows.

THE TWENTIETH ANNUAL NATIONAL AUTOMOBILE SHOW, under the auspices of the National Automobile Chamber of Commerce, was held in New York City, January 3 to 10. Passenger cars were exhibited at the Grand Central Palace and trucks at the New York 8th Coast Artillery Armory. At this year's show there were listed in the catalog 84 makers of passenger cars, 74 of trucks, and 284 manufacturers of accessories. Unquestionably the exhibition was the largest and most successful so far held.

A notable feature of the show was the increased use over last year of disk and steel wheels on both passenger cars and trucks. The superiority of such wheels over those built of wood has been fully demonstrated by transport experience during the war and apparently will be more widely adopted each year, especially for the heavier cars and trucks, as is said to be the general rule on cars of European manufacture.



METAL WHEEL EQUIPMENT FOR SOLID AND PNEUMATIC TIRES WAS THE FEATURE OF THE SHOW.

ACCESSORIES AT THE PASSENGER CAR SHOW.

Of special interest among the accessory exhibits the following may be mentioned:

AUTO PEDAL PAD CO. Molded rubber foot pads for pedal operation.

AUTOMATIC SAFETY TIRE VALVE CORP. The Lox-on air chuck, a device for use in making a secure air connection with the valve for inflation of the tire.

BREEZE MANUFACTURING CO. Flexible metallic tubing.

L. C. CHASE & CO. Automobile topping, robes, mohair velvets, etc.

COFFIELD TIRE PROTECTOR CO. A crescent-shaped endless pure gum protector to be placed between the tube and the tire tread. The effect is to deflect nails from penetrating the tube by means of a yielding thick mass of well-cured rubber.

COMPRESSION TUBE & TIRE CORP. A specially molded high-grade inner tube so shaped as to hold air after puncture by reason of the compressive strain exerted on the tread and side wall portions of the tube by the inflation pressure.

EASTERN RUBBER CO. Magic Mend, a self-curing plastic rubber composition adapted to close permanently small punctures in inner tubes, water bottles or similar soft rubber articles.

ESSENKAY PRODUCTS CO. Tire-filling solid composition as a substitute for air-inflated inner tubes.

ESSEX RUBBER CO. High quality red inner tubes and molded accessories.

GENERAL ELECTRIC CO. Fabroil gears. These consist of a cotton filler compressed under hydraulic pressure of several tons per square inch of side surface and held in compression by steel shrouds or side plates and threaded studs passing entirely through. Mazda lamps, and the Tungar apparatus for recharging batteries.

KEYSTONE RUBBER MFG. CO. Tire accessories, cement, patches and inner tubes.

MORSE CHAIN CO. Silent chain for transmitting power from gear to gear in front end drives in a variety of applications.

L. J. MUTTY CO. Dridek automobile topping; single and double-texture rubber waterproofed cloths.

GEO. H. REVES MANUFACTURING CO.. Auto pedal pads.

A. SCHRADER'S SON, INC. Tire valves, pressure gages and special connections.

C. A. SHALER CO. Electrically operated apparatus for sectional repair vulcanizing.

STORY RUBBER CORP Bonner inner tubes, having one ply fabric on thickened rubber tread, the surface of which supports compression under pressure and prevents leaks.

TITEFLEX METAL HOSE CORP. Flexible metal tubing without sliding joints for carbureter, exhaust, muffler and conduit connections.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO. Rectigon battery chargers, Mazda lamps, air compressors and portable electric instruments.

ACCESSORIES AT THE TRUCK SHOW.

JAXON STEEL PRODUCTS CO. A full floating wheel wherein the axle is carried by a disk supported on six pure rubber molded wheels which absorb the road shocks encountered by the surrounding steel rim solid tire.

LAMBERT TRUBLPRUF TIRE CO. A laminated solid tire built up with double plies of pictioned duck alternating with thick layers of rubber composition. The latter being pierced crosswise of the treadway by large holes in the two lower layers and staggered upper with lower, thus making a non-puncturable resilient whole.

SEWELL CUSHION WHEEL CO. A composite wood and rubber wheel tired with an ordinary solid rubber tire. The construction includes a compressable bridge-like molded strip of resilient rubber held between the parts of a double felloc, faced each side by a molded ring of rubber held in place by bolted-on rings.

WELLMAN-SEAVER-MORGAN CO. Exhibited their tire-applying press, adapted for heavy hydraulic duty in mounting and demounting solid rubber tires.

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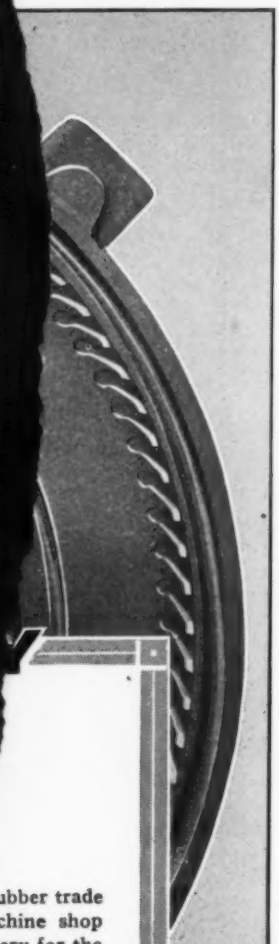

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NGINEERING CO.
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News of the American Rubber Trade.

DIVIDENDS.

THE Archer Cord Tire Sales Co., Louisville, Kentucky, has declared a six per cent cash dividend and a ten per cent stock dividend. Checks for the cash dividend, which is payable quarterly on stock of record December 20, 1919, were mailed January 15, 1920, and will be mailed at corresponding times hereafter. The stock dividend is payable to stock of record July 15.

The Brunswick-Balke-Collender Co., Chicago, Illinois, has declared the first quarterly dividend for 1920 on the common stock, at one and three-quarters per cent, payable February 15 on stock of record February 5, 1920.

The Electric Rubber Reclaiming Co., Barberton, Ohio, has declared and paid January 1, 1920, its regular quarterly dividend of one and three-quarters per cent on preferred stock.

The Hood Rubber Co., Watertown, Massachusetts, has declared its regular quarterly dividend of one and three quarters per cent, payable February 2 on preferred stock of record January 20, 1920.

The India Tire & Rubber Co., Mogadore, Ohio, has declared a stock dividend of forty per cent, payable January 2, 1920.

The Kelly-Springfield Tire Co., New York City, has declared the following dividends: regular quarterly, $1 per share, and stock dividends of three per cent on common stock, both payable February 2 on stock of record January 17; also quarterly dividend of $2 per share on eight per cent preferred stock, payable February 16 on stock of record February 2, 1920.

The Sterling Tire Corp., Rutherford, New Jersey, has declared the regular quarterly dividend at the rate of seven per cent per annum, for the three months ended Decembr 31, 1919, payable by check mailed January 15, 1920, to shareholders of record December 31, 1919.

The Portage Rubber Co., Barberton, Ohio, has declared a dividend of two per cent on its common stock.

The Rochester Tire and Rubber Co., Buffalo, New York, has declared the regular semi-annual dividend of seven per cent on outstanding preferred stock. This company has authorized a change in its name to "The Powertown Tire Corporation."

The Standard Underground Cable Co., Pittsburgh, Pennsylvania, has declared the following dividends: quarterly, three per cent; extra, three per cent; and special, three per cent; all payable January 10 on stock of record January 3, 1920.

The United States Rubber Co., New York City, has declared the following dividends: quarterly, two per cent, on common and preferred stock of record January 15, payable January 31; twelve and one-half per cent stock dividend, payable February 19 on common stock of record February 19, 1920.

FINANCIAL NOTES.

At the regular quarterly meeting of the directors of The B. F. Goodrich Co., held January 21, 1920, a dividend of 3½ per cent was declared on the preferred stock, 1¾ per cent payable April 1, 1920, to the preferred stockholders of record at the close of business March 22, 1920, and 1¾ per cent payable July 1, 1920, to preferred stockholders of record at the close of business June 21, 1920. An additional dividend of ½ per cent was declared on the common stock, which, with the dividend of 1 per cent declared at the meeting of October 15, 1919, makes a total dividend of 1½ per cent payable on February 16, 1920, to the common stockholders of record at the close of business February 5, 1920. A dividend of 1½ per cent was also declared on the common stock, payable on May 15, 1920, to the common stockholders of record at the close of business May 5, 1920.

The directors voted, subject to the approval of the stockholders at their annual meeting March 10, 1920, to retire 11,880 shares of the preferred stock prior to July 1, 1920, in accordance with the requirements of the Charter.

THE FIRESTONE TIRE & RUBBER CO. STATEMENT.

The annual report of the Firestone Tire & Rubber Co. for the fiscal year ended October 31, 1919, shows consistent growth in volume of business and profits. The sales for the year were $91,078,513, against $75,801,506 for the preceding year, an increase of $15,277,006, or 20 per cent. The profits for the year, after allowances for depreciation and deducting bad accounts, were $9,306,978, of which $2,597,787 was paid as dividends, the balance being placed to surplus subject to income and profits tax accrued. It was announced at the annual meeting that an extra dividend of $2 per share would be paid to stockholders of record December 15, and that it was hoped to put each quarterly dividend on that basis.

During the year the capital stock of the company was increased from $15,000,000 to $75,000,000, divided into $10,000,000 of 6 per cent preferred stock, $40,000,000 of 7 per cent preferred stock and $25,000,000 of common stock. Of the increased capital thus authorized, $10,000,000 has been sold, approximately half of it to employes of the company. Firestone sales are now moving at the rate of $150,000,000 a year, and that is the goal set for the present year.

The balance sheet as of October 31, 1919, follows:

ASSETS.

Lands, buildings, machinery and equipment. Net sound book value.		$18,820,214.82
Investments in miscellaneous stocks and bonds		895,804.50
Current assets:		
Finished and in-process goods and materials and supplies	$24,159,519.58	
Cash	3,749,744.40	
United States Liberty Loan and Victory Bonds—market value	1,264,216.56	
Accounts and notes receivable	15,645,416.71	
Total current assets		44,818,897.25
House and lot accounts receivable and unsold real estate of the Coventry Land and Improvement Co.		3,812,409.77
Due from employes on account of purchase of common capital stock and sundry advances. Stock purchases are secured by deposit of stock as collateral.		5,004,811.38
Expenditures applicable to future operations		401,460.83
Total		$73,753,598.55

LIABILITIES.

Preferred, 6%, cumulative capital stock. Authorized issue $10,000,000.		$10,000,000.00
Preferred, 7%, cumulative capital stock. Authorized issue $40,000,000.		10,000,000.00
Common capital stock. Authorized issue $25,000,000.		3,500,000.00
Current liabilities:		
Notes and acceptances payable	$5,812,691.06	
Accounts payable	3,336,517.81	
Accrued salaries, wages, taxes, etc	1,639,869.56	
Subscription to United States Victory Bonds —unmatured installments	238,700.00	
Total current liabilities		11,027,778.43
Mortgages and notes payable of the Coventry Land and Improvement Co.		1,899,112.00
Reserves:		
For welfare work and pensions	$1,341,638.83	
For insurance losses	554,530.49	
Total reserves		1,896,169.32
Surplus		*35,430,538.80
Total		$73,753,598.55

*Subject to provision for corporation income and profits tax accrued for the year ended October 31, 1919.

NOTE.—The Firestone Tire & Rubber Co. has a contingent liability as endorser on $130,388.53 of notes and trade acceptances receivable, discounted.

The directorate elected by the stockholders is as follows: Harvey S. Firestone, A. C. Miller, L. E. Sisler, S. G. Carlshuff, J. C. Robertson, J. W. Thomas, Harvey S. Firestone, Jr., A. G. Partridge, C. A. Meyers and Thomas Clements. The officers re-elected are Harvey S. Firestone, president; A. C. Miller, vice-president and general counsel; S. G. Carlshuff, secretary; J. G. Robertson, treasurer. Three new vice-presidencies were created, as follows: A. G. Partridge, vice-president, in charge of sales;

J. W. Thomas, vice-president, in charge of manufacturing; Thomas Clements, vice-president, in charge of offices and purchases.

ANNUAL BALANCE SHEET OF THE FISK RUBBER CO.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has recently issued its annual balance sheet for the year ended September 30, 1919, which shows the following figures:

ASSETS.

Capital assets:		
At Chicopee Falls—		
Land	$197,473.63	
Buildings	3,694,739.50	
Mold equipment	868,571.69	
Machinery	2,714,145.51	
Plant equipment	2,403,054.19	
		$9,877,984.52
At branches—		
Land	$171,629.54	
Buildings	93,734.93	
*Leasehold	4,523.19	
Equipment for stores	688,310.01	
		958,197.67
Total replacement value		$10,836,182.19
Reserve for depreciation		1,721,624.88
Sound value of capital assets		$9,114,557.31
Good will		8,000,000.00
		$17,114,557.31
Investments:		
Miscellaneous, including Federal Rubber Co., 25,500 shares		$230,001.00
Current assets:		
Raw materials and supplies at cost or less		$3,968,056.16
Work in process at cost		728,123.45
Finished stock at cost		9,652,332.62
Accounts receivable, less reserve		9,316,650.40
Notes		71,458.72
Collateral notes—employes' subscriptions to capital stock		93,277.26
Cash		3,675,810.95
United States Liberty Bonds collateral to loan, per contra	$2,754,700.00	
Less officers' and employes' payments	210,153.50	
		2,544,546.50
		$30,050,256.04
Deferred charges:		
Prepaid rents, royalties, local taxes, interest and insurance		$84,246.78
Stationery and office supplies		38,026.24
Other prepaid expenses		143,887.20
		266,160.22
		$47,660,974.57

*Leasehold property is our Pittsburgh branch located on leased land, being charged off during the period of lease.

LIABILITIES.

Capital stock:		
7 Per cent cumulative first preferred—		
Authorized and issued: 150,000 shares, par $100	$15,000,00.00	
Less purchased for retirement, 5,000 shares, par $100	500,000.00	
		$14,500,000.00
7 Per cent cumulative second preferred convertibles—		
Authorized 70,000 shares, par $100	$7,000,000.00	
Less 20,955 shares, par $100, converted into common stock	2,095,500.00	
Outstanding 49,045 shares, par $100		4,904,500.00
Common:		
Authorized 800,000 shares, par $25	$20,000,000.00	
Unissued 480,000 shares, par $25	12,000,000.00	
Issued 320,000 shares, par $25	$8,000,000.00	
Issued 114,380 shares, par $25, for conversion of first preferred convertible and second preferred stocks	2,859,500.00	
Outstanding 434,380 shares, par $25		10,859,500.00
Total capital stock outstanding		$30,264,000.00
Current liabilities:		
Loans payable		$1,650,000.00
Accounts payable		2,830,601.74
Accrued taxes and wages		276,476.04
Loans payable, per contra—United States Liberty Bonds		2,149,500.00
		$6,906,577.78
Balance of 1918 Federal income and war taxes (due December 15, 1919.)		$356,547.15
Excess of appraisal value of capital assets over book value at March 31, 1919		$1,027,931.86
Reserves:		
Reserve for branch insurance liability assumed by company.		$103,797.90
Reserve for mileage guarantee		100,416.58
Reserve for contingencies		52,679.75
Reserve for 1919 Federal income and war taxes		839,879.74
		$1,096,773.97
Surplus:		
Balance at December 31, 1918		$4,425,923.35
Surplus appropriated for retirement of old first preferred stocks restored to general surplus		1,938,544.19
Premium received on sale of 25,000 shares second preferred stocks		875,000.00
Miscellaneous income, including $191,000 resulting from conversion of first preferred convertible stock into common stock on basis 5 for		195,689.85
Profit January 1, 1919, to September 30, 1919, per schedule 7		4,199,399.06
		$11,634,554.45
Deduct:		
Dividends declared (first preferred stock—to August 1, 1919		$492,796.58
Dividends declared (second preferred stock—to September 1, 1919)		215,774.00
Provision for Federal income and war taxes		1,012,641.70
Premium paid for retirement of old issue of first preferred stock and commissions paid underwriters of new first preferred and second preferred stocks		1,878,995.55
Miscellaneous expenses in connection with issue and sale of new first preferred and second preferred stocks.		25,202.81
		$3,625,410.64
Balance		$8,009,143.81
		$47,660,974.57

The Hood Rubber Co., Watertown, Massachusetts, has formed a new subsidiary company under the name of Hood Products Co., Inc., which will deal in all kinds of rubber and leather goods, has been incorporated under Massachusetts laws with an authorized capital of $1,500,000, consisting of 10,000 preferred and 5,000 common shares. The preferred dividends will be cumulative at 7 per cent.

Sales of the Mason Tire & Rubber Co. for its third fiscal year, ended October 31, 1919, amounted to $3,468,858.52, with a net profit of $223,705.52. This is an increase of about 50 per cent over the preceding year's totals. During the past few months the company has opened ten additional direct factory branches in the United States, making eighteen in operation. The goal is a $7,000,000 business during the present fiscal year.

DUNLOP AMERICA LIMITED TO BUILD TIRE PLANT AT BUFFALO.

Dunlop America Limited has been incorporated, and will acquire all the rights of the original American Dunlop Tire Co. About 150 acres of land at Buffalo, New York, have been purchased, upon which will be erected a tire plant of the most modern kind. Cord fabric, which will be exclusively used, will be spun, twisted and woven from the raw cotton in a specially designed fabric plant on the Buffalo site. The Dunlop company believes in specialization and, therefore, with the exception of the Dunlop golf ball, its production will be confined to high-grade pneumatic cord and solid truck tires.

Dunlop America Limited as an American company will be operated by an American staff. The board will include a strong American element, as well as some of the chief members of the board of the British company, and will have the benefit of a full interchange of patents and technical processes with the British and other Dunlop companies, as well as the services free of cost of an advisory committee constituted from the expert staff of the British organization. The names of the directors and executive officers of Dunlop America Limited will be announced later.

SAVOLD TIRE REORGANIZATION.

The Savold Tire Corporation, New York City, which was incorporated early in 1919, and whose stocks had such an erratic career on the New York curb market, has been thoroughly reorganized in order that full advantage might be taken of existing possibilities. Those who formerly controlled its policies have stepped aside and a new personnel is now in charge.

THE PENNSYLVANIA RUBBER CO.

The Pennsylvania Rubber Co., which was incorporated in May, 1899, by Herbert Du Puy and others, began business in Erie, Pennsylvania, where it bought up the business of the Keystone Rubber Co. and the plant of the Erie Rubber Co., one of the pioneers in the trade, going back to the '80s. Three years later the plant was moved to Jeannette, Pennsylvania, on the Pennsylvania Railroad, twenty-six miles from Pittsburgh, where since 1902 it has gone on manufacturing belting, packing, hose, all kinds of rubber goods, particularly tennis balls and tires, at first for bicycles and carriages, then when the automobile came, for motor cars.

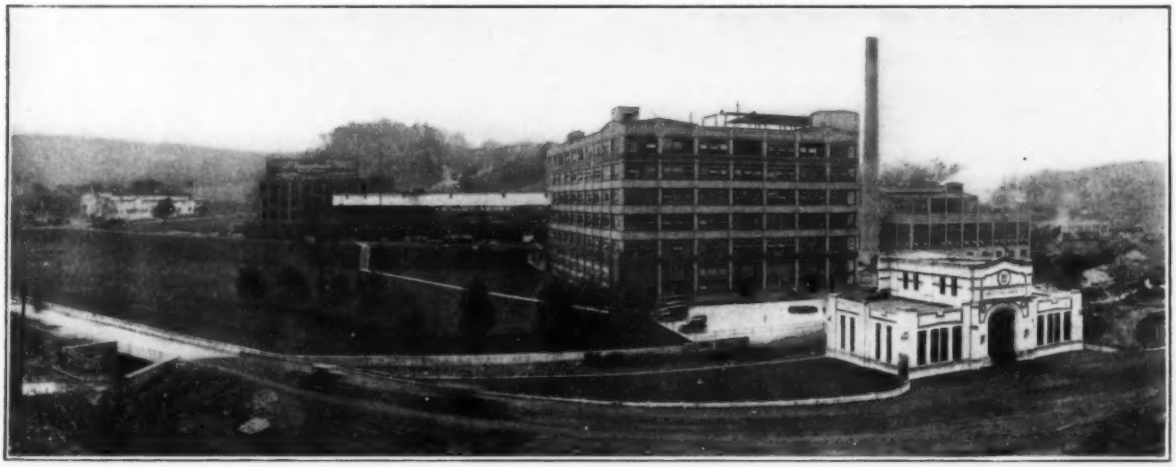
The business has expanded greatly in late years under the management of Seneca G. Lewis, so that four years ago the INDIA RUBBER WORLD published a picture of the improvements in the plant. At the end of 1917 the capital of the company was increased to $6,000,000.

The illustration gives some idea of the remarkable expansion of the business of the company in the past few years by the comparison of the original factory with the present plant.

It also shows to some extent the buildings which the company is putting up to secure the welfare and comfort of its employes.

The company employed 460 hands in 1910, and turned out 120 motor tires a day and as many tubes. This year the number of employes is 2,849, the daily output of automobile tires is 3,000, and of bicycle tires 3,000 also, while 5,500 automobile tubes are turned out. The company manufactures, besides, a greater number of tennis balls than any other concern in America.

The new buildings now being constructed will treble the present production. The company has also purchased two hundred acres of ground, extending from the factory to the Lincoln Highway, on which it plans to build 1,200 houses for the workmen; 71 of these houses in "Paruso Park" are already finished or are nearing completion.



PLANT OF THE PENNSYLVANIA RUBBER CO., JEANETTE, PENNSYLVANIA.

NEW INCORPORATIONS.

Allen Tire & Rubber Co., December 30, 1919 (Delaware), $1,000,000. M. L. Horty; S. L. Mackey; M. C. Kelly—all of Wilmington, Delaware.

Andover Rubber Co., November 17, 1919 (Massachusetts), $300,000. A. A. Gleason; J. J. Higgins, both of 60 State street, Boston; F. B. Carlisle, Andover—all in Massachusetts. Principal office, Andover, Massachusetts. To manufacture and deal in automobile tires.

Arrow Tire & Rubber Co., October 20, 1919 (Delaware), $50,000. C. B. Bishop; S. H. Baynard, Jr.; A. M. Fox—all of Wilmington, Delaware. Delaware agent, Delaware Charter Co., 904 Market street, Wilmington, Delaware. To manufacture and deal in supplies for automobiles, etc.

Becker & Rolfe, Inc., December 10, 1919 (New Jersey), $50,000. C. N. Becker; J. C. Rolfe, both of New Brunswick; R. E. Watson, Highland Park—all in New Jersey. Principal office, 41 Paterson street, New Brunswick, New Jersey. Agent in charge, R. E. Watson. To buy, sell, and generally deal in automobile tires, tubes, etc.

Berman Tire Co., Inc., January 12, 1920 (New York), $5,000. J. Shavelson, 1010 Flatbush avenue; M. E. Levine, 1150 President street, both in Brooklyn; S. Berman, 242 West 48th street, New York City—all in New York. To deal in tires.

Burrows, Archer & Roberts, Inc., December 30, 1919 (New York), $20,000. W. Burrows, 63 Park Row, New York City; W. L. Archer, Mt. Vernon; E. S. Roberts, Crestwood—all in New York. To manufacture tires and rubber goods.

Carlisle Tire Corp., November 13, 1919 (Delaware), $3,000,000. J. S. Bretz; H. Von Briesen; E. M. Simpson—all of New York. To manufacture tires, casings, etc.

Corona Cord Tire Co., November 26, 1919 (Pennsylvania), $500,000. T. Phillips, Jr., president; H. B. Callahan, vice-president; C. H. Miller, secretary and treasurer; J. V. and E. Ritts, B. D. Phillips and A. C. Fisher, directors. Principal office, East Butler, Pennsylvania. To manufacture cord tires and inner tubes.

Dixie Rubber Co., November 26, 1919 (Mississippi), $1,000,000. T. J. Graham, Indianola; J. W. Peyton and J. M. Clower—both of Dyer; E. N. Case, Sunflower; L. C. Cadenhead, Mahned—all in Mississippi; N. C. Elliott and T. Kirk—both of Memphis, Tennessee. Principal office, Jackson, Mississippi. To manufacture, buy and sell automobile tires and inner tubes and rubber goods, etc.

Doyle-Gearhart Tire Co., October 1, 1919 (California), $25,000. H. S. Doyle; J. W. Gearhart; P. H. Bottoms. Principal office, Fresno, California. To deal in automobile tires and accessories.

Elasticap Co., The, September 25, 1919 (New Jersey), $125,000. J. C. Farr, president, 75 Tenth street; J. B. Hamilton, vice-president, 1110 Park avenue; E. C. Farr, treasurer, 939 Washington street—all of Hoboken; A. T. Bruce, secretary, 789 Jackson Road, North Bergen—both in New Jersey. Principal office, 702 Clinton street, Hoboken, New Jersey. Agent in charge, W. C. Farr. To manufacture and sell mechanical and electrical goods and devices and particularly a patented rubber splice-insulator known as "Elasticap" to replace the rubber elastic tape now used for end-splices in fixtures, outlet boxes, etc.

F. & G. Tire Co., Inc., December 30, 1919 (New York), $5,000. W. P. Fraley, Jamaica; L. A. Giegerich, Jr., Riverdale on Hudson; C. J. Brown, Great Neck—all in New York. To deal in tires.

Globe Webbing Co., Inc., January 3, 1920 (New York), $30,000. B. L. Pearlman, 26 West 43rd street; G. W. Covert, 274 East 165th street, both in New York City; E. H. Pearlman, 285 St. Johns Place, Brooklyn—all in New York. To manufacture webbing, etc.

Grand Rapids Tire & Rubber Corp., January 7, 1920 (Michigan), $3,000,000. F. G. Withrow; M. J. Goldnir, both of Grand Rapids; L. A. Brown, Alto—all in Michigan. To manufacture automobile tires, etc.

Howe Rubber Corp., September 29, 1919 (Delaware), $18,000,000. T. L. Croteau; H. E. Knox; S. E. Dill—all of Wilmington, Delaware. To import, export and deal in crude and refined rubber and other products.

India Machine & Rubber Mold Co., The, January 1, 1920 (Ohio), $100,000. W. C. Wenk, president and treasurer; N. C. Williams, vice-president; G. T. Williams, secretary and general manager; F. Wolford; R. L. Kryder, directors. Principal office, Akron, Ohio. To manufacture special rubber machinery, cores, molds, etc.

Indian Tire & Rubber Co., November 20, 1919 (Delaware), $1,000,000. T. L. Croteau; P. B. Drew; H. E. Knox—all of Wilmington, Delaware.

Le Doux Rubber Co., November 17, 1919 (Delaware), $1,500 000. T. L. Ernst; L. S. Dumensil; J. J. Mechan—all of New York. To manufacture articles made of rubber.

Mandleberg Rainwear Co., Inc., The, December 31, 1919 (New York), $750,000. J. N. Kennedy, president and treasurer; C. F. Nield, vice-president; A. Davies, secretary. Principal office, 42 West 23rd street, New York City. To manufacture raincoats.

National Rubber & Belting Co., December 6, 1919 (West Virginia), $25,000. Homer and B. H. Wiseman; E. J. Jarroll; C. M. Dunnavant; R. Higgins—all of Charleston, West Virginia. Principal office, Charleston, West Virginia. To buy, sell and deal in mechanical rubber goods, etc.

National Rubber Corp., November 3, 1919 (California), $25,000. K. C. Cooper, manager. Principal office, 1003 South Figueroa street, Los Angeles, California. To deal in rubber goods.

Newtown Tire Co., Inc., January 12, 1920 (New York), $100,000. M. M. Burnet, 19 East Ninth street; J. F. Brandenberg, 111 West Eleventh street, both of New York City; G. A. Senior, Arlington, New Jersey. To manufacture tires.

Pocono Rubber Cloth Co., The, December 18, 1919 (New Jersey), $500,000 N. E. Bowman; T. S. Cart, both of Mt. Vernon, New York; R. H. Gulliver, Trenton, New Jersey. Principal office, 137 East State street, Trenton, New Jersey. Agent in charge, F. R. Brace. To manufacture rubberized cloth and other fabrics.

Portage Tire & Rubber Co., January 7, 1920 (New York), $100,000. S. B. Howard; G. V. Reilly; R. K. Thistle—all of New York. To deal in rubber tires, etc.

Puncture-Proof Pneumatic Tire Protector, Inc., October 1, 1919 (Delaware), $75,000. S. B. Howard; A. W. Britton, G. V. Reilly—all of New York. To manufacture and sell devices of all kinds for the protection of tires.

Ramo Tire & Rubber Co., September 23, 1919 (Delaware), $1,000,000. S. G. and D. Bear and C. K. Weter—all of Pittsburgh, Pa. To manufacture and sell tires and tubes.

Red Seal Rubber & Cement Co., The, December 4, 1919 (New Jersey), $250,000. George B. and Clarence A. Wilson, both of 19 Burgess place; W. A. Wilson, Second and South streets—all of Passaic; J. H. Smith, Jr., 183 Washington avenue, Rutherford—both in New Jersey; R. C. Wilson, 157 West 47th street, New York City. Principal office, Second and South streets, Passaic, New Jersey. Agent in charge, C. A. Wilson. To manufacture, buy and sell all kinds of patent rubber, cement, etc.

Rosbach & Bros., J. H., September 15, 1919 (Delaware), $4,000,000. H. R. Limburg; W. A. Hirsch; W. J. Mayer—all of New York. To deal in hides, skins, rubber goods, etc.

Rubber Trading Co., Inc., September 26, 1919 (Delaware), $500,000. T. L. Croteau; H. E. Knox, S. E. Dill—all of Wilmington, Delaware. To import and export rubber, etc.

Sinclair Rubber Co., Inc., September 16, 1919 (New York), $25,000. C. M. Pyle, president; I. J. Solomon, vice-president; E. P. Brown, secretary and treasurer. Principal office, 1679 Broadway, New York City. To remold tires.

Siohm Tire & Mould Co., Inc., January 8, 1920 (New York), $10,000. H. Raflovich; L. Siohm; W. Hartsberg—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires.

Tomah Rubber Works, September 24, 1919 (Wisconsin), $25,000. L. Hofmeister, president and treasurer, 174 Sixteenth street; C. E. Gage, vice-president, 881 Eleventh street; M. E. Prentiss, secretary, 1101 North avenue —all of Milwaukee, Wisconsin. Principal office, Milwaukee, Wisconsin. To manufacture, buy, sell and deal in rubber tubes, tires, and rubber specialties.

Union Rubber & Asbestos Co., January 3, 1920 (New Jersey), $50,000. D. M. Lovett, Trenton, New Jersey; C. H. Swoger, Pittsburgh; J. M. Shear and R. A. Mackie—both of Bradford; H. M. Prill and D. W. Mackie—both of Warren—all three in Pennsylvania. Principal office, 224 South Warren street, Trenton, New Jersey. Agent in charge, D. M. Lovett. To manufacture, buy, sell and deal in all goods, merchandise, and articles made wholly or in part of rubber.

Universal Rubber Goods Co., October 30, 1919 (Delaware), $1,000,000. A. W. Britton; S. B. Howard; G. V. Reilly—all of Wilmington, Delaware. To manufacture and build tires of rubber or metal.

Weinman Elastic Web Co., October 17, 1919 (New York), $50,000. L. Weinman; J. P. Segal; H. Danziger—all of 258 Broadway, New York City. To manufacture braid, lace and webbing.

West Side Auto Tire & Supply Co., November 28, 1919 (New Jersey), $25,000. Walter and Thomas Troy, both of 226 Wilkinson avenue; W. Russ, 444 Jersey avenue—all of Jersey City, New Jersey. Principal office, 746 West Side avenue, Jersey City, New Jersey. Agent in charge, W. Russ. To deal in autos, tires, etc.

Wigg Tire Corp., January 5, 1920 (New York), $100,000. C. and M. E. Wigg, both of Nutley, New Jersey; B. W. Everett, 1 Nassau street, New York City. To manufacture tires, etc.

VICE-PRESIDENT IN CHARGE OF SALES.

A. G. PARTRIDGE, recently elected vice-president in charge of sale and a director of the Firestone Tire & Rubber Co., Akron, Ohio, has been in the tire business since its infancy. Born in Jamestown, New York, he began his rubber career with the Diamond Rubber Co., Akron, Ohio, in 1899. Six years later, while in charge of the New York Diamond branch, he resigned to join the Firestone sales force. His advancement thereafter was rapid. In 1911 he was appointed assistant sales manager, in which capacity he visited the principal cities of the country developing new avenues of trade and promoting enthusiasm among the branch offices. On the election of R. J. Firestone to a vice-presidency in 1916, Mr. Partridge succeeded him as general sales manager, which position he held during the company's greatest growth and up to his own election to the directorate. He has been well prepared for his larger responsibilities by those he has carried for the company in the past, and his election is in accord with the Firestone policy of advancing men who have made good. His entire career has been in sales work, and in that side of the firm's activities he will continue.

A. G. PARTRIDGE.

JOHN W. THOMAS, VICE-PRESIDENT.

JOHN W. THOMAS, newly elected vice-president in charge of manufacturing of the Firestone Tire & Rubber Co., Akron, Ohio, has been with the company for twelve years. He has been works manager for some time and responsible for production since 1911. Having made his way up through the production end of the plant, he is well fitted for his larger work by intimate knowledge, experience and conspicuous ability.

JOHN W. THOMAS.

A native son of the Buckeye State, Mr. Thomas was born in Tallmadge, Ohio, in 1880. He spent his boyhood days on a farm, entering Buchtel Academy at the age of 17, and completing his education at Buchtel College, from which he graduated in 1904 with a degree of Ph. B. Shortly after graduation he entered the laboratory of The B. F. Goodrich Co., Akron, Ohio, where he spent three years in research and experimental work. In January, 1908, he joined the Akron, Ohio, organization of the Firestone Tire & Rubber Co. and installed its laboratory, where he served as chemist for two years, going thence to the manufacturing department, serving an apprenticeship in one tire manufacturing unit after another, and becoming manager of one of the departments. In 1911 he was appointed superintendent of the factory, and in 1916 he was elected a member of the board of directors of the company. As chairman of the solid tire division of the War Service Committee of the Rubber Industry of the U. S. A. he has earned the gratitude of the trade. Mr. Thomas makes his home in Akron, is married and has four children, two boys and twin girls. He is a member of the Congregational Church, of the Lone Star Fraternity, the Portage Country Club, Akron City Club, Rotary Club, Ohio Society of New York, Society of Automotive Engineers, Knights of Pythias, and the Akron Chamber of Commerce, of which last organization he is a director.

PERSONAL MENTION.

Victor W. Fink, for the last ten years connected with the Rubber Importers' & Dealers' Co., Inc., New York City, has been placed in charge of the crude rubber department of the firm of E. S. Kuh & Valk Co., Produce Exchange Building, New York City.

R. W. Wheeler, Bush Terminal, Brooklyn, New York, has been appointed representative in the State of New York for the Cleveland Osborn Manufacturing Co., authorized to do business in New York.

Thomas F. Hetherman, formerly connected with Neuss Hesslein & Co., Inc., on January 1 formed a new corporation with Robin & de Laurant, under the name of Hetherman & Co., Inc., at 487 Broadway, New York City, as a broker specializing in Far Eastern produce.

J. E. Mayl, who has been New England district sales manager of the Firestone Tire & Rubber Co., Akron, Ohio, with headquarters in Boston, has been promoted to Eastern sales manager with headquarters in New York City, replacing Lewis G. Fairbanks, who has been elected vice-president and general manager of the Firestone Steel Products Co., manufacturers of rims, etc.

J. V. Mowe, formerly assistant general sales manager of the Kelly-Springfield Tire Co., has been promoted to the position of general sales manager, succeeding Otis R. Cook, who has been connected with the company for the past nine years and has been vice-president and general sales manager for the past six years. Mr. Cook will remain in Cleveland, Ohio, looking after special work for the company as well as cooperating with the financial interests in New York City, and will retain all of his stock in the corporation and remain on the board of directors.

W. H. Bell has been appointed assistant general sales manager of the Kelly-Springfield Tire Co.

EASTERN AND SOUTHERN NOTES.

The Kelly-Springfield Tire Co. is about to commence the erection of a 16-story office building in New York City, to which it will remove the general sales department which has been located in Cleveland, Ohio, and where the executive offices of the company will be established.

The Beacon Tire Co., Inc., Beacon, New York, has completed its three-story addition and equipped it with machinery of the latest type.

The Burnet-Webb Tire Corp., 518 South Clinton street, Syracuse, New York, has taken over exclusively the Syracuse branch of the Sterling Tire Corp., Rutherford, New Jersey, where, in addition to the wholesale distribution of Sterling tires and tubes, it will retail standard makes of tires, tubes, and accessories. The officers of the company are: William E. Housel, president; Arthur E. Webb, vice-president in charge of territorial dealer business; J. H. Burnet, secretary and treasurer in charge of sales and service.

The Mutual Tire & Rubber Co., New York City, has opened at Springfield, Massachusetts, and New Haven, Connecticut, retail and sporting goods departments in its branches in those cities. The company operates a chain of automobile tire, accessory, and supply stores.

The Forrest Tire & Rubber Co., Shubert Building, Philadelphia, Pennsylvania, has been incorporated under the laws of Delaware with 1,000,000 shares of fully paid and non-assessable shares of common stock at a par value of $1, with the following officers: R. E. Connor, president; Olie T. Alveberg, vice-president Abraham Mitnick, secretary and treasurer. Rudolph Shlifer is general manager and Samuel G. Grossley, engineer.

The Archer Cord Tire Sales Co., Louisville, Kentucky, at its recent annual meeting elected the following officers: W. F. Bigelow, president (reelected); W. A. Bieter, vice-president; Maurice Hessian, secretary and treasurer; Frederick Graham, chairman of the executive committee.

The Dixie Rubber Co., 768-770 Randolph Building, Memphis, Tennessee, recently incorporated under the laws of Mississippi, expects to begin construction of its plant in Memphis in April. Arrangements for the building and equipment have been completed and the company hopes to begin production of cord and fabric tires and inner tubes in the autumn.

FOOTWEAR PRICES INCREASE.

Price announcements on footwear made on January 1 by the United States Rubber Co. for the current year show an average increase of approximately twenty per cent on the full line.

On January 1, 1919, the company's footwear prices were reduced, the average cut for the whole line being about five per cent. This price reduction followed closely the decrease in the cost of materials that came soon after the signing of the armistice. During the past year the cost of these materials mounted to even higher levels than during the war, and the increase in footwear prices which has recently gone into effect is a result of the higher cost of materials and labor.

Taking the five per cent reduction of a year ago into consideration, the average increase in price for the two-year period of 1919-1920 is only fifteen per cent.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

TRENTON NOTES.

THE MANAGERS AND FOREMEN of the Thermoid Rubber Co., Trenton, recently held their second annual banquet and entertainment at Hildebrecht's. T. A. Welger, superintendent of the factory, was presented with a handsome amethyst ring by his foremen. Members of the committee in charge comprised John Coleman, T. A. Welger, A. D. Nevins and E. L. Royal.

The Trenton rubber manufacturers responded liberally to the fund raised for the poor children of Trenton during the holiday season. The children were given an entertainment in a local theater and each one presented with pretty gifts.

The recent round-up of "Reds" in Trenton and vicinity found but a handful of radicals employed in the rubber plants, and these men were finally released by the Government authorities.

The Puritan Rubber Manufacturing Co., whose plant on Perrine avenue, Trenton, was recently destroyed by fire, has taken out a building permit for the erection of new works on the old site. The building will be one story brick, 28 by 128 feet in size, and will cost $7,500.

The Luzerne Rubber Co., Trenton, has purchased a tract of land, 200 by 200 feet feet, opposite its works on Muirhead avenue and intends later to enlarge the plant.

The Joseph Stokes Rubber Co., Trenton, has contributed $250 to the police pension fund of Trenton.

Alfred Whitehead, secretary of the Whitehead Brothers Rubber Co., has been ill at his home in Trenton.

The seventy caddies employed at the Trenton Country Club were recently given a dinner at the club, where gifts were also presented. John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., acted as chairman of the affair.

William J. R. Stokes, treasurer of the Thermoid Rubber Co., Trenton, has been apointed a member of the Trenton Sinking Fund Commission. Mr. Stokes was formerly city treasurer of Trenton.

The Union Rubber & Asbestos Co. has been incorporated and has opened an office at 224 South Warren street, Trenton. The company will deal in mechanical rubber goods and asbestos products of all kinds, especially the rubber goods used in the oil business. The officers of the new concern are: Donald W. Mackie, president; J. M. Shear, vice-president; Charles E. Day, sales manager; Harry M. Prill, treasurer; Charles H. Swoger, secretary, and D. M. Lovett, general manager. Mr. Swoger has been in the rubber business for the past twenty years. The company will soon employ a force of salesmen in Pennsylvania and the southwestern oil districts, as well as in other parts of the country.

Horace B. Tobin, secretary and treasurer of the United & Globe Rubber Co., Trenton, has been made a director of the Standard Fire Insurance Company.

The Crescent Insulated Wire & Cable Co., Trenton, will build on recently acquired property a one-story factory addition of steel and concrete, 50 by 125 feet, to cost, with equipment, about $40,000.

The Netherlands Gutta Percha Co., Singapore, manufacturer of rubber goods, has let a contract in Trenton for a large supply of transfer patterns for the stamping of tubes and radiator hose.

MISCELLANEOUS NEW JERSEY NOTES.

The Overman Cushion Tire Co., Belleville, New Jersey, has plans drawn for a two-story factory, 64 by 120 feet, at Cortlandt and Rutgers streets.

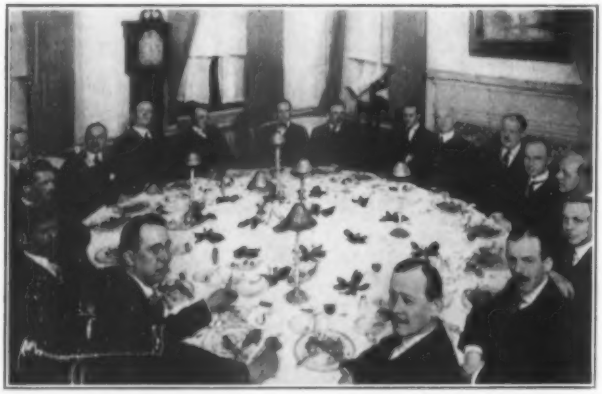
The Rydon Tire & Rubber Co. has let a contract for the erection of a brick and steel factory building at Fourth and Railroad avenues, Asbury Park, New Jersey, to cost $100,000. The structure will be 75 by 185 feet.

The Pocono Rubber Cloth Co., manufacturers of rubberized cloth for automobile tops and various specialties, has purchased the plant of the Howard Demountable Rim Co., in Hamilton Township, New Jersey, and will establish a large factory there. The property consists of three acres and a manufacturing plant 90 by 170 feet. The Pocono company has also obtained options on adjoining lands along the main line of the Pennsylvania Railroad for future use. The plant cost the Pocono company $45,000. About 100 hands will be employed.

Brighton Mills, Inc., Passaic, New Jersey, has devised a service button for employes who remain with the company and serve full time except for illness or other excusable absence. The button given at the end of one year is of blue enamel with gilt lettering; second year, bronze; fifth year, silver; tenth year, gold. The design consists of the monogram "B. M." in a central circle; the words 'Brighton Mills" in an intermediate one; and the words "Loyalty," "Cooperation," and "Fellowship" in the outermost one which is indented between the words.

TRENTON RUBBER MANUFACTURERS' ASSOCIATION.

This association has been in existence a little over four years and has resulted in much benefit to the local rubber manufacturers, all of which are members. The roster of the association includes the Acme Rubber Manufacturing Co., Ajax Rubber Co., Inc., Bergougnan Rubber Corp., Essex Rubber Co., Empire



ANNUAL MEETING AND BANQUET OF THE TRENTON RUBBER MANUFACTURERS' ASSOCIATION AT THE TRENTON COUNTRY CLUB.

Rubber & Tire Co., Globe Rubber Tire Co., Hamilton Rubber Manufacturing Co., Home Rubber Co., Crescent Insulated Wire & Cable Co., Luzerne Rubber Co., Semple Rubber Co., Joseph Stokes Rubber Co., Thermoid Rubber Co., United & Globe Rubber Co., Whitehead Bros. Rubber Co., Mercer Rubber Co., all of Trenton; and the Vulcanized Rubber Co., Morrisville, Pennsylvania; Quaker City Rubber Co., Philadelphia, Pennsylvania; Electric Hose & Rubber Co., Wilmington, Delaware.

Meetings are held every two months except during the summer period. Matters of particular as well as general interest are discussed at these meetings, and the friendly intercourse arising has been of much benefit in many ways to the members. The labor turn-over was one of the first matters given attention, and after a short time this feature of economic waste was very much reduced.

The bi-monthly meetings are always held in the evening, when those present partake of the famous cuisine of the Trenton Country Club.

The annual meeting held December 8, and names of officers elected at that time were recorded in THE INDIA RUBBER WORLD January 1, 1920.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE FIRST MONTH of the new year found the manufacturers of rubber goods in Rhode Island ready for a continuance of the season of great prosperity that has been unprecedented for the past four years. Everything is favorable to the year 1920, exceeding any previous twelve months in the history of the industry. Orders on hand are sufficient to justify this prophecy, but the labor situation continues to cause the manufacturers of rubber goods, in common with practically all other lines, considerable worry. Practically every plant in the State is looking for, but only in comparatively few cases, is finding, experienced help. And this, notwithstanding the substantial increases that have recently been made in the wage schedules.

The Atlantic Tubing Co., of Knightsville, is giving free life insurance to all its employes who have been with the concern six months or more. The initial amount of insurance issued to any employe is $500, and this amount increases each year by $250 until a maximum of $1,000 is reached. A blanket policy covers all the lives, and each person insured is presented with a certificate. He names his beneficiary in the same manner as he would under an ordinary policy, and has the provilege of changing the beneficiary as circumstances demand. No medical examination is required.

One of the largest and most important mill plant purchases that have occurred in this state in many months was consummated recently when the plant of the Greene & Daniels Co. of Fawtucket was transferred to the Ninigret Mills Co. of Boston, the majority stock of which is owned by The Fisk Rubber Co., of Chicopee Falls, Massachusetts. This concern is a newly formed Massachusetts corporation. with a capital stock of $3,000,000, divided into $2,500,000 preferred and $500,000 common stock. J. A. Brander, of Brander & Curry, Inc., New York city, is president; Charles F. Broughton, treasurer of the Wamsutta Mills, New Bedford, Massachusetts, vice-president; H. T. Fisk, of The Fisk Rubber Co., treasurer; Henry Otte, first assistant treasurer; Charles S. Fowler, second assistant treasurer; Arthur Houghton, secretary, and John E. Searle, clerk.

The company will operate two plants for the manufacture of automobile tire yarns and fabrics, one being located at Pawtucket and the other at Westerly. The Ninigret Mills, at Westerly, which will be operated under the direction of Mr. Fowler, are already equipped with twisting, spooling and weaving machinery, but 20,000 spindles are to be added at an expense approximating $1,000,000 and a new building, to cost $500,000, is to be erected which will afford facilities for the employment of some 700 persons. This plant will have an annual capacity of 250,000,000 pounds of tire fabrics, and will carry an annual payroll of nearly $1,000,000.

The Greene & Daniels plant is located on Central street, and employs about 600 textile workers. It will be under the direction of Mr. Otte, and is to be thoroughly overhauled and arranged for the production of tire yarns and fabrics.

January was a busy month at the plant of the National India Rubber Co., Bristol, because of numerous conferences of the committees on industrial relations and employes' welfare; conferences of sales forces and department heads, and other activities, together with material improvements of the plant, and the unusual business activities.

At a conference of the committees on industrial relations of the rubber factories controlled by the United States Rubber Co., held at the National factory, there were inspections and comparisons of plans. The physicians, dentists, and nurses of the factories also held a convention the same day at the DeWolf Inn at Bristol, when papers were read by several, including Dr. M. J. O'Brien, dentist at the Bristol plant, who spoke on "Industrial Dentistry."

In line with other improvements in the welfare work at the National factory, the circulating library, which the company has maintained for the benefit of its employes for a long time, is to be materially enlarged, the demands upon its facilities having increased to a considerable extent in the last few months.

A powerful pump for use in bringing salt water from Bristol harbor to the National factory has been set in place at the pumping station on Thames street, greatly increasing the factory water supply.

Mrs. Augusta Mapes, who was employed at the National factory for more than 40 years as overseer in the clothing and other departments, previous to some ten years ago, died at the Home for Aged Women in Bristol on January 11, in her 87th year.

The Revere Rubber Co. continues to extend and improve its plant on Valley and Hemlock streets, Providence, and has recently purchased several additional tracts of land, so that the holdings of this concern have increased considerably during the past year. The company is now erecting for storage purposes a three-story fireproof building of steel, brick and concrete on Hemlock street. It is 120 feet by 110 feet, and work is being pushed as rapidly as possible. The company is also building an addition to one of its two-story factory buildings on Eagle street.

The Kokomo Tire Co., a corporation to deal in motor cars, tires and accessories, in Providence, with a capital stock of $10,000, has been granted a charter under the laws of Rhode Island. The incorporators are Maurice Robinson, David C. Adelman and Charles M. Robinson.

The National Rubber Co., 36 Franklin street, Providence, has been purchased by Amedo Morville and Carlo Morville, who will continue the business.

Ludger Goyer and Gustave Grandine have filed their statement with the city clerk of Central Falls, that they are the owners of the Reliable Vulcanizing & Tire Co., 575 Dexter street, that city.

The firm of Albert Bliss & Co., has been incorporated under the laws of Rhode Island, and organized as the Bliss Rubber Co., and will continue business at 130 Empire street, Providence. Albert Bliss is president and general manager, and the firm will handle Racine tires.

The Columbia Narrow Fabric Co., manufacturers of elastic webbing at Shannock, is planning an addition to increase the plant's operations. The concern recently negotiated for the purchase of the Carmichael Mill property at Shannock.

Three new mills are to be added to the plant of the Tubular Woven Fabric Co., Pawtucket, to adjoin the present property at Main and Carver street and to extend to the Pawtucket river. One of the structures will be of brick, four stories high, 58 by 183 feet, and the other two buildings will be one story high, 99 by 37 feet, and 60 by 105 feet, respectively. The estimated cost of the new buildings will be $200,000.

The New England Elastic Braid Co., 18 Broadway, Pawtucket, is owned by Mrs. Agnes Coucher of that city, according to her statement filed at the city clerk's office.

W. Maxwell Reed, for the past year and a half plant manager of the American Wringer Co., at Woonsocket, has resigned. John F. Sweeney, assistant plant manager and sales agent, will fill the position temporarily.

The Broadway Tire Exchange, 107 Broadway, Providence, has changed the firm name to Millers, Inc., the new officers being David Miller, president; Bernard H. Miller, treasurer and general manager; Henry J. Miller, vice-president, and Samuel Miller, secretary. Charles E. Angell and Angelo Uranoli, formerly of the Broadway Tire Co., Providence, have taken over the vulcanizing department and have opened a shop at 50 Broadway.

Trial of the suit of the I. T. S. Rubber Co., of Elyria, Ohio, against the United Lace & Braid Manufacturing Co., of Providence, in which the plaintiff alleges infringement of a patent on a rubber heel, was heard in the United States District Court before Judge Arthur L. Brown early in the month. The plaintiff asked that the court grant a permanent injunction, restraining the defendant from the further use of the heels in controversy, and also for an accounting and settlement from the defendant company of the sales of rubber heels which the plaintiff declares are an infringement on their patent rights. The case was taken under advisement.

THE RUBBER TRADE IN MASSACHUSETTS.

By a Special Correspondent.

THE NINTH ANNUAL CONVENTION of the National Shoe Retailers' Association, held in Mechanics' Building, Boston, January 12, 13, 14 and 15, proved to be a triumph, exceeding in attendance, number of exhibitors and of important addresses all previous gatherings of the association. Some 6,000 buyers from all parts of the country overtaxed the capacity of the city's hotels. At the various business sessions many timely talks were given by leaders in the industry, some with motion picture, the subjects treated including general business and market conditions, style and price tendencies, mainufacturing and sales problems, etc.

Interested centered, however, in the manufacturers' exhibits in Paul Revere Hall, where the rubber industry was well represented by the following firms displaying rubbers, rubber boots and overshoes, rubber and fabric shoes, rubber heels and fiber soles and machinery: Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut; Cambridge Rubber Co., Cambridge, Massachusetts; Firestone Tire & Rubber Co., Akron, Ohio; United Shoe Machinery Co., Boston, Massachusetts; Foster Rubber Co., Boston, Massachusetts; The B. F. Goodrich Co., Akron, Ohio; The Goodyear Tire & Rubber Co., Akron, Ohio; Hood Rubber Co., Watertown, Masachusetts; Plymouth Rubber Co., Canton, Massachusetts; United Lace & Braid Manufacturing Co., Providence, Rhode Island.

Two miniature rubber shoe factories operated in the basement of Mechanics' Building by the United States Rubber Co. attracted much attention. Expert shoemakers demonstrated how rubber shoes and white canvas fiber-soled shoes are made, starting with the crude rubber and going right through to the finished product.

The second evening, the Style Show, one of the most popular features of past conventions, was repeated in elaborated form. Beautiful young women, appropriately costumed, paraded along the broad, elevated "Chemin des Dames" and other war-named avenues, and mingled with the crowd displaying the newest styles in all sorts of footwear. To show the latest dictum in rubber and fabric sport shoes, there were bathing girls, tennis girls, golfing girls and basket-ball girls. Children's and men's canvas footwear were also shown.

The convention came to a close Thursday evening with a banquet in Convention Hall, at which Governor Calvin Coolidge and Senator David I. Walsh, of Massachusetts, were the principal speakers. The next national footwear convention will be held at Milwaukee, Wisconsin.

Some 800 foremen in the footwear division of the United States

Rubber Co. held their second annual convention in Boston, December 29 and 30, for the purpose of discussing technical and production problems of the industry with the aim of standardizing methods of operation in the various factories.

The supervisory forces of 17 different footwear factories operated by the company in Cambridge, Malden, Melrose, Stoughton and Millville, Massachusetts; Bristol and Woonsocket, Rhode Island; New Haven, Naugatuck, Waterbury and Milford, Connecticut; New Brunswick, New Jersey; Williamsport, Pennsylvania; St. Louis, Missouri; and Hastings, Michigan, were represented.

The convention opened with a general session in Ford Hall at which Myron H. Clark, general factory manager of the footwear division, presided. Homer E. Sawyer, vice-president of the company, spoke on industrial relations; C. R. Haynes discussed technical factory problems; George L. Lawrence, production factory manager, touched upon the problems of quantity production; C. T. McCarthy, general manager of the Naugatuck factory, outlined the use of charts and statistics in factory administration, and A. T. Hopkins, service manager, led a discussion on industrial relations.

During the afternoon and the next day the convention was dwivided into departmental groups for luncheon in the various hotels and discussion of common problems. The first evening a smoker and entertainment was given in Ford Hall, at which the National India Rubber Co. Band, of Bristol, Rhode Island, played under the direction of F. E. Essex. The convention came to a close the second evening with a reception and banquet given to the officials of the company at the Copley-Plaza Hotel, the guests including Charles B. Seger, president; Homer E. Sawyer, vice-president; Myron H. Clark, general footwear factory manager; George H. Mayo, general manager of sales, and C. W. Barnes, general sales agent. Topical songs were rendered by the various factory groups, each under the direction of a cheer leader. Spare moments during the two days were devoted to sightseeing trips to points of interest about the city.

Realizing that a knowledge of English means better opportunities and more comforts of life to the immigrant, the Hood Rubber Co. plans to make a wide-spread campaign in Americanization work. Census cards have been given to the foremen in each department. Every foreigner is being interviewed personally. Teachers from Cambridge and Watertown have been secured; class-rooms in different parts of the plant have been arranged; books and equipment purchased; meetings with motion picture films, and classes conducted by Mr. Mahoney in charge of the State Americanization Work and George Quinby, of the Associated Industries of Massachusetts, are being held in the restaurant. The classes chosen for this work are made up of men and women chosen from different parts of the plant, and the intelligence and interest shown by them only too conclusively proves that there is a boundless field for this work, and an infinite amount of good can be done for the people of foreign birth who have become a part of the community.

The Mulconroy Co., Philadelphia, Pennsylvania, manufacturer of metallic hose, etc., opened, on January 1, a branch store at 85 Purchase street, Boston, Massachusetts, through which to handle the New England trade.

At the recent annual meeting of Aleppo Temple, Ancient and Accepted Order of Nobles of the Mystic Shrine, Francis H. Appleton, of F. H. Appleton & Son, Inc., reclaimers, and Joseph H. Work, dealer in lasts for rubber shoes, were elected respectively assistant rabban and treasurer. Both have long been prominently identified with various Masonic bodies in Boston.

Dr. Robert S. Quinby, service manager of the Hood Rubber Co., Watertown, has been elected president of the Employment Managers' Association, an organization composed of an extensive membership of men selected from New England industries to make a detailed investigation of better employment relations.

The various organizations headed by George N. Tougas have taken the entire second floor at 161 Summer street, Boston, for headquarters and main sales offices. The Tougas organizations include the Tougas Shoe Co., Boston, shoe jobbers; the Salem Die Co., Salem, die manufacturers; George N. Tougas, Boston, shoe and rubber manufacturers' supplies. Mr. Tougas is also a director of the Brockton Trust Co., Brockton, Massachusetts.

GEORGE N. TOUGAS

The demand for Killion cushion heels is such that the Killion Rubber Co., Dorchester, will discontinue its mechanical and all other lines and continue its efforts to heels alone. Various alterations have been made in the plant, a new mixer, presses and other equipment have been installed, and the company will soon be in a position to double its present production.

Owing to the death of L. L. Cheney, Boston, salesman for the Clifton Manufacturing Co., manufacturers of clothing, carriage cloth and proofed fabrics, at Jamaica Plain, the firm will temporarily be represented in this territory by I. M. Post and T. Frank McCarthy, its New York City salesmen.

Frank A. Vanderlip, a director of the United States Rubber Co., and one time assistant secretary of the treasury, in a recent address before the Old South Meeting House Forum, attributed chiefly to the excessive issue of paper money by the United States and other countries during the war the present high prices and declined purchasing power of the dollar. He urged "spiritual regeneration" as the remedy and asserted the need to deflate by self-denial, although it would test the character of the nation to accomplish it.

With the organiaztion of the Tyrian Service Association by employes of the Tyer Rubber Co., Andover, there begins another interesting experiment in industrial relations. The preamble to the constitution sets forth the belief that employers and employes have common interests, and that all problems can be solved and permanent prosperity assured by this considerate and earnest cooperation. The employes therefore undertake by frank discussion and earnest effort to solve the problems confronting the Tyer Rubber Co. and themselves in order to promote their common welfare and to advocate sound Americanism in such a way as to serve the community, commonwealth and nation.

The business of the association is to be transacted by a committee of twenty-five persons representing the various departments by allotment according to the number of operatives in each. Eight may be elected by the management, eight by the foremen's committee and the balance are to be elected by and from the employe membership. Monthly meetings are to be held, and the committee will serve as the channel of communication between the employes and the company, making such suggestions or recommendations as are deemed advisable. The following matters are regarded as within the scope of discussion by the committee: General welfare of the employes and the company; methods and equipment; output and cost; working hours; wages and economy; misunderstanding between the company and the employes; suggestions.

A recent survey of the operatives of the plant gave the following result regarding citizenship: Number of citizens, 81.2

per cent; number holding first place, 10.2 per cent; number of aliens, 8.6 per cent. Nearly all are of English speaking stock.

The Athol Manufacturing Co., Althol, Massachusetts, manufacturer of pneumatic rubber goods, announces that a new company will soon be formed to conduct the business of its Metropolitan Air Goods Department. Richard A. Whall, formerly secretary and treasurer of the Metropolitan Air Goods Co., originally at Reading, Massachusetts, is air goods manager of the Athol Manufacturing Co., and many new articles of his design have been placed on the market.

The Taunton Rubber Co., Taunton, reports that its 1919 business, notably in "Peerless" heels, was double that of 1918. A new high grade heel under the brand "Columbia" will soon be placed on the market. Three salesmen are introducing these goods to the trade, namely, W. Gomberg, Frederick Eppler and Harry Crossman. The officers of the company remain as in the past, William L. Gifford, president; Joseph L. Gifford, treasurer.

Several hundred delegates from the National Shoe Retailers' Association convention in Boston were entertained at a luncheon given by M. M. Converse, president of the Converse Rubber Shoe Co., Malden, at the factory restaurant on January 13. They were afterward shown through the plant and displayed much interest in the processes of rubber shoe manufacture.

The new five-story storage addition to the south end of the shipping room is nearly completed. The four-story addition to the north end of the building is also well along. The first floor will enlarge the mill room for Converse tires, while the floors above will be occupied by the receiving department, its former quarters providing needed expansion in the shoe factory.

An oil burning system is being installed at the plant of F. H. Appleton & Son, Inc., at Franklin, Massachusetts, to overcome the coal shortage.

REORGANIZATION OF THE BOSTON BELTING CO.

W. E. Hardy, F. H. Rice, H. H. Whitesel and associates, who have been operating the Boston Belting Corp., so far as production and sales are concerned, have purchased and taken over all assets of the corporation which relate to the mechanical rubber goods business. The Boston Belting Co., whose major assets had been transferred to the Boston Belting Corp. some two years ago, had never been dissolved. Consequently, on November 6, when Thomas A. Forsyth and J. H. D. Smith resigned as directors and as president and treasurer, respectively, their positions were filled by the election of W. E. Hardy, president and general manager; F. H. Rice, treasurer, and H. H. Whitesel, director and sales manager. Therefore, the business is continued without break, inasmuch as the new officers had operated the company for two years prior to its sale, under the management of Mr. Forsyth.

The Boston Belting Co., incorporated under the laws of the State of Massachusetts, was originally established in 1828, incorporated by State Legislative Grant in 1845 as the Goodyear Manufacturing Co., the firm name being changed in 1847 to Boston Belting Co. The present capitalization is $1,015,000; $515,000 preferred issue; $500,000, common. All stock has been issued. Over one-third of all employes are shareholders.

H. H. Whitesel, who grew up in the mining fields of Colorado and Missouri, was engaged in the supply business at Joplin, Missouri, some fifteen years ago. He became identified with the Diamond Rubber Co. in 1908, as field salesman, later becoming St. Louis branch manager and then general mining representative, continuing with the Diamond Rubber Co. until 1915, he then took up the western sales of the Boston Belting Co. and in January, 1918, became general sales manager.

F. H. Rice was an Ohio farmer boy. After spending six years in the machine tool department of the Warner & Swasey Co. of Cleveland, Ohio, specializing in cost accounting, he became identified with the treasury and accounting departments of the Diamond Rubber Co. in 1908, continuing in this position for four years, then joining the organization of the Firestone Tire & Rubber Co. for three years. In 1915 he became assistant treasurer of the Boston Belting Co.

W. E. Hardy, upon his graduation from Buchtel College—now Akron University—spent a few years mining in Arizona and Old Mexico. After a year with the Brown Hoisting Machine Co., of Cleveland, Ohio, he got a "job" operating a belt press with the Diamond Rubber Co. at Akron, Ohio, in 1903, later becoming successively assistant sales manager, New York manager of mechanical sales and general mechanical sales manager at Akron. He joined the Boston Belting Co. organization in 1915.

PORTAGE WORKS MANAGER.

JOHN T. JOHNSON, works manager of The Portage Rubber Co., of Akron, Ohio, is working out production plans that entail the building of a large new unit to the Portage factory at Barberton, Ohio, to be devoted almost exclusively to the production of cord tires. Work will be started soon on the new structure which is to comprise a header building with three wings, each of which will be 200 by 60 feet and several stories in height.

JOHN T. JOHNSON.

Mr. Johnson is a graduate of the mechanical engineering college of Cornell University, was for many years with The B. F. Goodrich Co. at Akron. Starting in the cord tire department, he became manager of that department and later was placed in charge of the Goodrich tire experimental department. For a short time he was works manager of the Cord Tire Corp. at Chester, West Virginia, leaving that position to come to the Portage company. He is a keen student of industrial relations and an enthusiastic supporter of athletics for both men and women.

McGRAW'S BALTIMORE BRANCH MANAGER.

L. L. MCANANEY, who has been appointed manager of the Baltimore branch of The McGraw Tire & Rubber Company, Cleveland, Ohio, is one of the best known tire men in the country, having been identified with the industry for the past seventeen years.

Mr. McAnaney's position in the tire business is an enviable one, as he by no means started at the top of the ladder. Starting as a stenographer in the factory of The B. F. Goodrich Co. at Akron, Ohio, he was next made a salesman, working the territory around Boston for the Goodrich company. The marked ability of Mr. McAnaney soon won for him another promotion—that of manager of the Goodrich company's Cleveland branch. In Cleveland he was a big success and became one of the most popular tire men in Ohio. For over nine years he managed the Goodrich branch, while for over four years previous to his connection with the McGraw company he served as manager for the Republic Rubber Co., Youngstown, Ohio.

L. L. MCANANEY.

Mr. McAnaney's pleasing personality, his energy, and his ability as a tire expert, are certain to win for him and the McGraw company a host of new friends in the Baltimore territory.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

AKRON NOTES.

THE B. F. GOODRICH CO. and The Goodyear Tire & Rubber Co. have taken out permits for additions to their plants in Akron to cost nearly $3,000,000. The permit issued to the Goodrich company was for an $800,000 addition, which was followed a few days later by another one calling for the expenditure of $1,400,000.

These permits, company officials state, do not represent the actual expenditure for the buildings to be erected, since they are based upon cost of construction to-day, and it is well known that the cost of all building materials and labor will have advanced a great deal before the work is completed a year hence.

The great question in the minds of the factory managers of both of these companies is where they can house the men to man these plants.

The Portage Rubber Co. recently decided to issue another $1,000,000 worth of capital stock to stockholders. Persons holding five shares of common stock are privileged to purchase one share of the new issue. The capitalization of the company is not to be increased, only $2,500,000 worth of common and $1,300,000 of preferred stock having been issued of the original $10,000,000 authorized. The business of the company has doubled during the past few months.

Akron's $1,000,000 automobile show, held in the largest garage in the world, was a success. The attendance during the week of the show was approximately 35,000. Plans are being made for an even greater show next year.

The Philadelphia Rubber Works Co., Akron, has made arrangements for the construction of a $17,000 addition to its plant. Work will commence on the addition in the very near future. A building permit for the structure has been obtained from the city building department.

Promotions for several sales executives were among the New Year changes in personnel announced by the Firestone Tire & Rubber Co., Akron.

E. W. BeSaw, who has been western sales manager for three years, with headquarters in Akron, becomes the general sales manager, succeeding A. G. Partridge, who was recently made vice-president in charge of sales.

F. K. Starbird, who has been a district sales manager, with headquarters in Minneapolis, succeeds Mr. BeSaw as western sales manager.

L. G. Fairbank, who has been eastern sales manager, with headquarters in Akron, becomes vice-president and general manager of Firestone Steel Products Co.

Paul P. Sheeks, graduate of South Dakota University, and an all-around athlete, has been appointed coach and athletic director of the Firestone Tire & Rubber Co., Akron.

At a special meeting of the stockholders of the Amazon Rubber Co., Akron, steps were taken to increase the capitalization of the company from $400,000 to $1,500,000.

The Miller Rubber Co., Akron, according to F. C. Millhoff, its general sales manager, enjoyed during 1919 the biggest tire year in its history, from the standpoint of production and sales, the increase over the sales of the previous year amounting to approximately 50 per cent.

The coal strike was met by The General Tire & Rubber Co., Akron, by the purchase of an option on a mine of 30 tons, daily capacity for 30 days and asking for volunteers from the employes of the company to mine the coal. Fifty men immediately responded, of whom eight were experienced miners. Trucks were used by the company to carry the coal to the plant.

The business of The General Tire & Rubber Co. amounted to $5,000,000 during the past year, it was announced at the annual meeting of the stockholders of the company recently. This amount is 95 per cent greater than the business during the previous year. The officers of the company who served during the past year were reelected.

The new clubhouse of The Goodyear Tire & Rubber Co., situated near the company plant, will be ready for occupancy about February 1. An appropriate program for the opening is being arranged by the company. The building is probably one of the most pretentious ever erected for welfare work in this country. It is seven stories high and will tower above the surrounding Goodyear buildings. It will contain a gymnasium, a theatre to accommodate 2,000 persons, a swimming pool, a reading room, a library, music rooms, a cafeteria and a film manufacturing department.

One of the floors will be devoted to the Goodyear University, which will be established in the near future. Plans for this educational institution have not yet been completed, but it is believed in well informed circles that instruction will be given which will make it possible for an employe to obtain a degree equivalent to that of doctor of philosophy in the ordinary university.

The H. B. Bixler Co., headed by H. B. Bixler, a consulting engineer with offices in the Ohio Building, Akron, has announced plans for a laboratory and manufacturing testing plant which will sell its services to the smaller rubber companies in the United States. Mr. Bixler's plans include a factory where rubber goods will be manufactured on a small but absolutely commercial scale. The plant which is to be built in Akron during the first months of the new year will cost approximately $600,000.

At the recent directors' meeting of The Williams Foundry & Machine Co., Akron, F. E. Holcomb was reelected president and general manager of the company. Mr. Holcomb was elected president of the concern in 1918, succeeding J. K. Williams in that office. He was formerly manager of the Akron plant of the Kelly-Springfield Tire Co.

F. E. HOLCOMB.

The other officers of the company are: S. E. Ziliox, vice-president; G. C. Dietz, treasurer, and W. J. Slater, secretary and assistant treasurer; directors, Charles Herberich, Aaron Burnett, and Charles Reymhann.

The Williams Foundry & Machine Co. manufactures tire repair equipment in addition to building machinery and appliances for tire and rubber plants. Its development has been steady and consistent and the treasurer's report for the year just ended states that the business for the preceding fiscal year amounted to more than $2,000,000.

The Portage Rubber Co., Akron and Barberton, Ohio, at the annual meeting of its directors held on January 13, 1920, reelected the following officers: M. S. Long, president; James Christy, chairman of board of directors; J. W. Maguire, vice-president and general manager. The newly elected officers are: H. M. Kerr, secretary; W. E. Wilson, treasurer; and R. J. Cole, assistant treasurer. Mr. Kerr will also act as controller.

Ground is being broken for a large addition to the Portage Company's plant, to take care of increasing business, and it is expected that the new addition will double the present capacity.

The B. & W. Rubber Co., Akron, has completed its main building, 60 by 240 feet, two stories in height. The machinery for the mechanical department is installed and in operation and that for the tire department is being installed. It is hoped that the tire department will be in operation by April 1, with a daily production of 150 tires. H. A. Backderf is president of the company.

CLEVELAND NOTES.

The Cleveland Osborn Manufacturing Co., Cleveland, Ohio, has changed its name to The Osborn Manufacturing Co., Inc.

The Tyler-Patterson Co., 404 Superior Building, Cleveland, Ohio, has been formed by Edgar J. Tyler, until recently vice-president and director of Ralph L. Fuller & Co., Inc., and C. B. Patterson, formerly in charge of the rubber materials division of the Fuller company. The new concern will act as manufacturers' agents, brokers and dealers in raw materials for the rubber industry and others.

The Uncle Sam Tire Co. has changed its name to The Hubbell Tire & Rubber Co., with offices at 6545 Carnegie avenue, Cleveland, Ohio. It manufactures tires and tire machinery and will install equipment for the manufacture of its own patented tire molds and vulcanizers. The authorized capital has been increased from $200,000 to $1,200,000.

MISCELLANEOUS OHIO NOTES.

The Mason Tire & Rubber Co., Kent, Ohio, at its annual stockholders' meeting, elected the following directors for the fiscal year 1920: O. M. Mason, John H. Diehl, R. M. MacKinnon, D. M. Mason, E. G. Tillotson and W. R. Green. These in turn, at the first directors' meeting, elected the following officers: O. M. Mason, president; John H. Diehl, first vice-president; R. W. MacKinnon, second vice-president; D. M. Mason, treasurer, and William A. Cluff, secretary. W. J. Rennick and H. W. Sidnell were also appointed assistant treasurer and assistant secretary, respectively.

The Marion Tire & Rubber Co., Marion, Ohio, was reorganized at the beginning of 1920, and its capital increased to $750,000. The new officers are nearly all Akron men. The president is A. F. Ayers; vice-president, W. E. Cameron; secretary, G. W. McLaughlin; treasurer, S. F. Zilliox. The other directors are R. C. Ellsworth and W. A. Patterson, of Akron; C. W. Mapes, J W. Jacoby and R. D. Belden, of Marion, and W. H. Holreistott, of New York. W. A. Patterson was made factory manager. The capacity of the Marion plant at present is 1,500 tubes and 400 tires per day, but it is planned to double this production as soon as possible.

The Ashland Tire & Rubber Co., Ashland, Ohio, expects to complete the first unit of its factory in February. It is 225 feet long and 100 wide, with 45,000 square feet of floor space, and is built of reinforced concrete. The main building, power house, and two smaller buildings will cost approximately $150,000. The machinery has been ordered and a two months' supply of crude rubber purchased. The company will manufacture cord and fabric tires.

Export arrangements have been made with A. Metzner, of Cleveland, whereby George W. Bond will represent the Ashland company on his present trip abroad. He will visit England, Czecho-Slovakia, Germany and Austria, and other Central European nations.

The Ashland Tire & Rubber Co. was incorporated in June, 1919, with $500,000 capital stock, of which it has sold more than $350,000 to date. The officers of the company are: J. Fickel, president; G. C. Weyher, vice-president, and A. A. Fickel, secretary and treasurer. The president and H. C. Bate, one of the directors, left in January on a three weeks' business trip to Cuba to make a careful study of that market for automobile and truck tires.

The India Tire & Rubber Co., Mogadore, Ohio, has just completed the new building south of its initial structure, besides improving the older building. At the annual meeting on January 19, stockholders were asked to ratify an increase in the capital stock from $1,500,000 to $5,000,000, this increase having been acted on favorably by the board of directors to take care of increasing business.

Plans for increasing the capital of the Interlocking Cord Tire & Belt Co., of Mogadore, was decided upon at a stockholders' meeting, held recently, but no definite announcement has been made as to the amount. The company is made up of 125 Akron business men. For the past year it has manufactured 30 by 3 tires, but arrangements are now being made to include other sizes. The purpose of the new capital is said to be to bring the capacity of the factory to 1,000 tires per day.

The McGraw Tire & Rubber Co. at the annual meeting of stockholders held at East Palestine, Ohio, on January 12, 1920, elected officers for the ensuing year: E. C. McGraw, president; John Morgan and R. W. McGraw, vice-presidents; John Morgan, treasurer; L. M. Kyes, secretary; H. C. Johnston, assistant secretary. Directors: E. C. McGraw, John Morgan, R. W. McGraw, L. M. Kyes, George Flaccus, J. C. Chamberlin, S. L. McCune, William Leary, A. W. Henn and H. M. Bacon.

During 1919 the business each month showed substantial increases over the previous year's record. In 1920 new branches will be added to the fourteen already established. The officers deny emphatically the rumors of the sale or merger of the company.

F. E. Kaeppel, recently associated with the Mechanical Rubber Co., Chicago, Illinois, and formerly with the Federal Rubber Co., Cudahy, Wisconsin, has been appointed general sales manager of the newly organized Ohio State Rubber Tire Co., Port Clinton, Ohio, which builds tires and tubes for the jobbing trade exclusively. Mr. Kaeppel will have sole charge of the company's sales throughout the United States.

TRAILERS TO CUT THE COST OF MOTOR HAULAGE.

More than half a billion dollars a year is being spent unnecessarily in the United States for road haulage by motor truck. Some 600,000 trucks throughout the country are rendering an annual service of about 7,950,000,000 ton miles at a cost not far from $1,828,500,000. This is based on an average operating cost of 23 cents per ton-mile.

Tables of operating costs of trailers and semi-trailers show the cost to vary from about three and one-half cents to six and one-half cents per ton-mile, according to type and size of trailer. This indicates five cents as an average, but to be conservative, an average of ten cents per ton-mile is taken as the basic cost of haulage with trailers and semi-trailers.

If every motor truck were to draw one trailer or semi-trailer of the same load capacity as the truck, half the total tonnage would be carried on the trailers at a saving of 13 cents per ton-mile or a total of $516,750,000 annually in the nation's motor haulage bill. This is the solution if the cost of motor haulage at distances greater than fifty miles is to be reduced materially and put on a competitive basis.

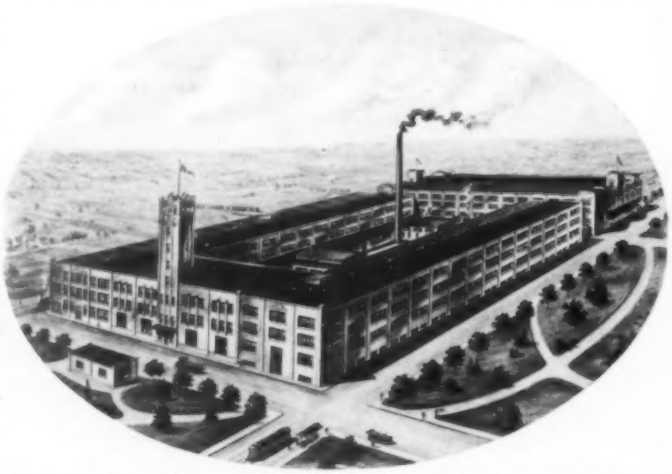
Incidentally 600,000 trailers would call for 1,200,000 to 2,400,000 tires for original equipment and from 300,000 to 600,000 spare tires besides.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" AND "RUBBER MACHINERY," by Henry C. Pearson, should be in the library of every progressive rubber man.

THE PERFECTION TIRE & RUBBER CO.

ONE of the pleasantest experiences of a recent Western trip was a visit of a representative of THE INDIA RUBBER WORLD to the plant of The Perfection Tire & Rubber Co., at Fort Madison Iowa, one of the most progressive rubber manufacturing concerns in the Middle West. This plant, comprising 380 acres of land, is most favorably located on the main lines of the C. B. & Q. and Santa Fe railroads and is an attractive example of rubber mill architecture. The factory buildings are of fire-proof construction, with dimensions of 350 by 180 feet, affording a floor space of 260,000 square feet. They are equipped with automatic sprinklers and fire doors throughout and the arrangement of the various departments constitute a most ingenious plan to economize effort and avert lost motion. Separate from these buildings are a well equipped tool house and one devoted to spreader work.

A large number of substantial and attractive dwellings, costing from $5,500 to $8,000, have been erected for the factory executives and are now being occupied by them. An imposing brick structure, now being built, on the main street, in front of the factory, will serve as a club for the entertainment of visitors. Each room will have a bath attached and dining and entertainment facilities will be provided for the guests of the company.



PLANT OF THE PERFECTION TIRE & RUBBER CO., FORT MADISON, IOWA.

The mill and calender rooms, building and vulcanizing departments are equipped with the most modern types of machinery and devices known to rubber manufacturing usage. The laboratory in charge of a competent chemist, is fitted with the latest and most approved appliances. The power plant is in consonance with the general character of the mill, and leaves little to be desired in point of complete and up-to-date equipment. The power itself is derived from the Keokuk Dam said to be the largest in the country and yielding power at $0.007 per kilowatt. The present output of 700 tires and 500 tubes a day will be increased to meet the growing demand for these products. The company has on hand sufficient material, including chemicals, crude rubber, and fabric to meet its requirements until next September.

The products of The Perfection Tire & Rubber Co., include an asbestos protected tire of unique, patented structure, for which is claimed unusual durability and inexpensive mileage. Another, is a cord tire built on the Dickinson cord tire machine controlled by the company, and is expected to prove an important factor in tire production. The third is a ribbed or plain tread fabric tire which has elicited favorable comment and a good demand. Perfection gray and red inner tubes and inner linings are of construction and quality commensurate with general "Perfection" standards. The favorable labor conditions in this section are reflected in the fact that the 600 employes of the company are 100 per cent American.

The president and general manager of the company, Preston E. Roberts, who is admittedly responsible for the development and present status of The Perfection Tire & Rubber Co., is a man of unusual capacity, versatile and resourceful in a marked, unusual degree. The other officers are R. J. Evans, vice-president and F. J. Keating, secretary and treasurer. The board of directors comprise Rufus F. Robinson, Chicago, Illinois; Preston E. Roberts, Fort Madison, Iowa; F. J. Keating, Peoria, Illinois; J. F. Figley, Canton, Ohio; Edwin Telman, Peoria, Illinois. R. J. Evans, Wabash, Indiana; H. M. Scambler, Chicago, Illinois.

The general superintendent, William T. Whitlock, was formerly with the G. & J. Tire & Rubber Co. and The Fisk Rubber Co., and is an expert in modern tire production. He is ably assisted by Curtis L. Moody.

The Wabash, Indiana, division of The Perfection Tire & Rubber Co., is devoted to the manufacture of mechanical goods and asbestos fabrics. It comprises 100,000 square feet of floor space and it is stated that the output of this division is contracted on a cash in advance basis. The products are filter cloth, plain cloth, wire inserted cloth, yarns, mantle yarn, tape and listing, braided tubing, braided cord, twisted cord rope packing, wick packing, mill board, carded fibre and a general line of mechanical and molded specialties including plumbers' supplies, braided flax packing and shoe soles and heels.

An arrangement covering a period of twenty years has been made by The Perfection Tire and Rubber Co., with the Nemours Trading Corp., who have undertaken the entire distribution of "Perfection" products.

MID-WESTERN NOTES.

By a Special Correspondent.

AT THE ANNUAL MEETING of the directors of the Mid-West Rubber Manufacturers' Association, held in Chicago January 15, the following officers were elected for the ensuing year:

John T. Christie, president; Hawkeye Tire & Rubber Co., Des Moines, Iowa; C. Wright, vice-president; Racine Auto Tire Co., Racine, Wisconsin; W. W. Wuchter, secretary; Nebraska Tire & Rubber Co., Omaha, Nebraska; George B. Dryden, treasurer, Dryden Rubber Co., Chicago, Illinois.

At the annual meeting of the Nebraska Tire & Rubber Co., held at Omaha, Nebraska, January 5, a resolution was unanimously adopted changing the capital stock of the company to $200,000 preferred stock and $300,000 common stock, and authorizing the officers to offer for sale $100,000 of the new common stock. The following were reelected to the board of directors for the coming year: James E. Cornish, V. E. Holm, S. C. Wolfe, George W. Masson, G. C. Peironnet, Alva Smith and W. W. Wuchter. The board of directors later reelected the following officers for the year: Alva Smith, president; G. C. Peironnet, vice-president; F. M. Holloway, secretary; W. W. Wuchter, general manager and treasurer.

With the commencement of the new year and its new addition complete and machinery installed, the Wilson Tire & Rubber Co., Springfield, Illinois, has changed the policy of the company from making the "Wearwell" tires to making a fabric tire of Egyptian fabric guaranteed for 6,000 miles. It has also part of its new cord equipment in and is building cord tires which will be guaranteed for 8,000 miles. The factory output will be approximately 800 tires per day by the end of February.

The Brunswick-Balke-Collender Co., Chicago, Illinois, manufactures billiard tables, phonographs, phonograph records, automobile tires and hard rubber goods, and the output is largely oversold in all departments. Five new factories for the manu-

facture of the Brunswick phonographs and phonograph records were purchased in different cities during 1919, and ground will be broken in the early spring for a large addition to the tire manufacturing plant at Muskegon, giving a capacity of 5,000 tires per day. Sales for 1919 were $25,000,000 as against $12,416,000 in 1918. Estimates based on sales during January, 1920, put the total sales for the current year at $45,000,000 exclusive of the sales of the two lumber mills which the company owns in upper Michigan.

The Standard Four Tire Co., Keokuk, Iowa, held its annual sales convention, January 6-10, 1920, at Keokuk. All salesmen and branch managers were in attendance, talks by prominent men were given and a dinner and dance was held January 7. The close cooperation between the management and the employes is one of the features of this company and as one salesman remarked, "The whole company is like one large family, less the usual family disputes."

Robert J. Garrene, general manager of the New Ten Broeck Tyre Co., recently entertained about five hundred employes and their families at the plant with a vaudeville and cabaret "par excellence." Walther Grote, factory superintendent and assistant general manager, mystified the audience with a sleight of hand performance. Allan Heine, advertising manager, next on the program with a violin solo, was followed by a professional interpretation of how they dance in Hawaii. After refreshments were served, a jazz orchestra furnished music for a dance, which was thoroughly enjoyed by everyone.

Inaugurating a new policy of establishing distributing centers for its products in various sections of the country, the Republic Rubber Co., Youngstown, Ohio, has opened a western distributing warehouse at First and St. George streets, St. Louis, Missouri, under the management of Edgar Evans. The St. Louis branch, which has just removed from 2020 Locust street to 1021-1029 Arcade Building, will continue to be operated independently under the management of L. N. Bartlett, who will conduct a truck tire service department in the basement of the distributing center building.

Glenn H. Morris, formerly of Los Angeles, California, has been appointed advertising manager of Thomas E. Wilson & Co., Chicago, Illinois, dealers in sporting goods.

Claude Platt, who has been with The Fisk Rubber Co., Chicopee Falls, Massachusetts, for fourteen years, of late having served as special factory representative, has resigned to enter the retail automobile trade in Chicago, Illinois, his home city.

The Kerr Co., Fort Worth, Texas, has changed its address from 1501½ to 207½ Main street. It expects to begin actual construction of its plant in February and production about May 1. The officers are: A. H. Kerr, president and treasurer; J. A. Dacus, vice-president and general manager; J. A. Smith, secretary; F. X. Schuler, consulting engineer.

The Portage Rubber Co., Akron and Barberton, Ohio, has established a distributing warehouse in Chicago, Illinois, in addition to several new factory branches in various parts of the country.

PACIFIC COAST NOTES.

By Our Regular Correspondent.

LOS ANGELES NOTES.

THE EXECUTIVE OFFICES of the Samson Tire & Rubber Corp. have been removed from the factory at Compton to large and commodious quarters at 333 West Pico street, Los Angeles, where the service station has been located for several months. The company, of which Adolf Schleicker is president, manufactures cord tires.

William J. Kelly, dean of the rubber importers of the United States, of the firm of Poel & Kelley, New York City, spent a fortnight in Los Angeles on his way to Honolulu with his daughter, Miss Jeannette Kelly. He also visited San Diego and San Francisco. During his Los Angeles sojourn he was a guest at the winter residence of Henry C. Pearson, publisher of THE INDIA RUBBER WORLD, and passed several hours on the golf links of the Brentwood Country Club.

Steps to organize a Pacific Coast Cotton Exchange were taken recently in Los Angeles when men identified with every phase of this growing industry in California and Arizona met at the Los Angeles Athletic Club. Leading cotton growers, shippers, manufacturers and representatives of local banks were present.

The Mohawk Rubber Co., of Akron, Ohio, has leased the ground floor of the Flower Auditorium Building, Los Angeles, where a factory branch in charge of Carl Laux will be established.

B. F. Wade, operating as the B. F. Wade Tire Co., of 512 East Eighth street, Los Angeles, has filed in the United States Court an involuntary petition in bankruptcy. The creditors asking that Wade be adjudged a bankrupt are the Canton-Blackstone Co., with a claim of $17,516.93, the Tyer Rubber Co., of Andover, Massachusetts, $13,675.43, and the Dayton Rubber Manufacturing Co., $2,000. W. H. Moore, Jr., was appointed receiver for the concern under a bond of $4,000.

Edward M. Snuffin, district manager of the Ajax Rubber Co. in Los Angeles, has returned from a two weeks' tour of Arizona during which he completed arrangements for the establishment of a factory branch in Phoenix.

What constitutes somewhat of an innovation in tire distribution methods has been inaugurated in southern California by the Rubber Products Co., of Barberton, Ohio, manufacturers of "Stronghold" and "Barberton" tires. As the result of recent negotiations the Ralphs Grocery Co., Los Angeles, becomes the distributer of these brands of tires and they will be placed before the consumer through the chain of seven Ralphs retail stores in Los Angeles and by other dealers in the surrounding towns.

J. B. Wood, distributor of Hewitt tires and tubes in Los Angeles, is planning to bring the factory basket-ball team from Buffalo to Los Angeles and is trying to arrange a series of games for the event with some of the best teams on the Coast.

H. G. Smith, manager of the Los Angeles branch of the Ajax Rubber Co., Inc., for the past four years, has resigned to accept a position in a different capacity. He was one of the best known figures on automobile row.

The Los Angeles branch of the Firestone Tire & Rubber Co., with a newly organized bowling team, has entered the first national telegraphic tournament organized by that company, scheduled for February 1. It is open to all branches of the company and will be rolled simultaneously on that night, the names of the individual players and their scores being telegraphed to Akron in code. A. G. Partridge, vice-president in charge of sales, has donated a beautiful trophy cup as a prize to become the permanent property of the team winning the title two years. E. M. Barlow, of the sales department, is manager of the Los Angeles team. The line-up is as follows: E. A. Douglas, captain; R. A. Guthridge, R. Y. Copelin, G. O. Fries, H. Johnston, R. W. Irwin and H. V. Wilson.

J. B. Linerd, president of the Globe Rubber Tire Manufacturing Co., of Trenton, New Jersey, was a recent visitor in Los Angeles. He is said to be the youngest head of a tire concern in the United States. During his visit he was in conference with A. T. Smith, Pacific Coast representative of the Globe company and W. Reeve Gartzmann, manager of Hawley, King & Co., Southern California distributors.

Construction work is going forward rapidly on the new building being erected for the Miller Rubber Co. of California at 1239 South Olive Street, Los Angeles. The building, owned by Jonathan R. Scott, will cost $26,000. It is a two-story brick structure especially designed for the local branch of the company.

Harold Austin Freeman, a graduate of the University of Southern California, class of 1916, is to be in charge of the chemical laboratory of the Goodyear plant at Los Angeles.

New Year's greetings from Frank R. Carroll, head of The B. F. Goodrich Co. interests in the Orient have been received in Los Angeles. He was formerly in charge of the Los Angeles branch, but was assigned to Japan, where American tires are making tremendous gains.

W. S. Thatcher, of the Los Angeles branch of the Brunswick-Balke-Collender Co. tire department, has received word of the expansion plans of the concern, by which the capacity of the plant has been doubled. Samuel J. Turnes, general sales manager in California, accompanied by E. Tatman, assistant sales manager, recently paid a visit to Los Angeles.

Louis Lichtenberger, president of the Lichtenberger-Ferguson Co., factory distributor of Norwalk tires in Los Angeles, says that January is a heavy buying month in the tire trade while December is the slowest month of the year. The low ebb is due to weather conditions and to the fact that dealers do not want to carry a big stock through their annual inventory period which usually takes place the first of each year. According to Mr. Lichtenberger, the following is a table of percentage for the year's distribution of tires throughout the country based on three years' records:

Month.	Per Cent.	Month.	Per Cent.
January	10 1/10	July	10 4/10
February	8 4/10	August	9 5/10
March	10 3/10	September	7 1/10
April	8 3/10	October	6 4/10
May	9 8/10	November	4 9/10
June	10 1/10	December	4 7/10

Marshall E. Morris, manager of salesmen for The Goodyear Tire & Rubber Co., has been appointed a member of the board of directors of The Goodyear Tire & Rubber Co., of California. Mr. Morris first came to the Goodyear company as manager of the carriage tire department in 1912. Since that time his rise has been remarkable even for the rubber industry.

Frank Westerhoff, who formerly represented the Standard Four Tire Co., Keokuk, Iowa, in Illinois, has been appointed manager for the company at its branch at 348 West Pico street, Los Angeles.

A movement has been started to make Los Angeles, California, the terminus of the Lincoln Highway. The proposal is to establish a branch of the great trancontinental highway from Ely, Nevada, to the California city, a distance of 770 miles. Ely is the first town reached after crossing the desert section of the Great Salt Lake country.

NORTHWESTERN NOTES.

Leavens & Howard, of Portland, Oregon, Pacific Northwest distributers for the Sewall cushion wheel for trucks, have opened a branch in Seattle.

The Western Rubber Co. has begun to manufacture tires in its new plant in South Tacoma, Washington. Machinery was installed early in the year, there being some little delay in getting shipments. The plant is so located that raw rubber can be handled from ship side to the factory direct. The plant started with a working force of 125 men. Elmer Dover, former secretary of the Republican National Committee, and later Pacific Coast manager for Byllesby & Co., operators of public service plants, is president of the concern.

The Washington Tire & Rubber Co., Spokane, Washington, started operations in a small way in May, 1919, and entered its first full year's production January 1, 1920. The production will reach 200 casings and 200 tubes a day during February, to be increased from month to month. At the present time 120 workers are employed, 94 per cent of whom are stockholders in the company.

Although its estimated production for 1920 was placed at 60,000 casings and 40,000 tubes, it is believed that the demand for its product, which is being marketed under the trade name "Western States," will increase to 100,000 casings and 100,000 tubes this year. At present fabric tires only are made, but later cord tires will be manufactured.

The officers of the company are all representative and well known Spokane business men. The president is A. G. Hanauer, vice-president, T. S. Lane, and secretary-treasurer, H. S. Burdick.

CANADIAN NOTES.

THE NEW PRICE LIST on rubber footwear was issued in Canada on December 26, 1919, instead of two months later as is usual. The prices are considerably higher than the old list, being approximately from 10 to 15 per cent more on light lines and from 15 to 20 and 25 per cent on other goods. Advances in the cost of raw stocks and labor are given as the reasons for the issuing of the new price list at the earlier date.

The Canadian Board of Commerce, on November 26, 1919, issued an order that the margin of gross profit on sales of boots, shoes, rubbers, overshoes, etc., in retail shoe stores shall not exceed 33⅓ per cent of the sale price.

Gutta Percha & Rubber, Limited, held a meeting of branch managers in Toronto recently, at the King Edward Hotel. The Ontario division extends to Brockville in the East, to Sarnia in the West, and to North Bay in the North.

The Canadian Shoe Manufacturers' Association held its annual convention in Quebec City, at Chateau Frontenac, January 20-21.

The Ames Holden McCready System, Rubber Section, has appointed H. A. Braendle, M. A., physicist in charge of its Montreal laboratories and H. F. Schippel, B. Sc., research engineer. Mr. Braendle is a g raduate of the University of Toronto where he conducted research work on colloids under Professor E. F. Burton, while Mr. Schippel was formerly on the staff of McGill University. Both men were also more recently with the general laboratories of the Canadian Consolidated Rubber Co., Limited.

W. B. Wiegand, formerly general technical superintendent of the Canadian Consolidated Rubber Co., Limited, has been appointed director of manufacturing for the Rubber Section of the Ames Holden McCready System, Montreal, Quebec.

The British & Foreign Agencies, Limited, 17 St. John street, Montreal, Quebec, has secured the exclusive Canadian agency for "Lastawl" fibrous rubber soling manufactured by The "Lastawl" Co., 132 Boundary street, Liverpool, England.

The Canadian Customs Department has ruled on the duties to be levied on a number of articles containing rubber, making them invariably higher than the British preferential rates. The rates are: Belting, not of leather, 27½ per cent ad valorem; belts, other than transmission belts, 17½ per cent; finished parts of garters and hose supporters, 20 per cent; brake lining, 30 per cent. The last article is subject in addition to a war tax of 7½ per cent ad valorem.

QUEBEC IN 1918 EXPORTED 159,175 TONS OF ASBESTOS AND ASBESTIC, valued at $9,053,945, as compared with 154,452 tons, valued at $7,240,697 in 1917. The stock on hand December 31, 1918, was 14,609 tons of the value of $2,085,395. The average value per ton of asbestos in 1918 was $63.35, as against $52.45 in 1917. Of the 1918 exports 6,518,687, more than two-thirds, went to the United States.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

MANUFACTURERS in the United Kingdom are hoping that 1920 will open with the resuscitation of THE INDIA RUBBER WORLD, or rather a cessation of its suspended animation. We have our own labor worries here of one sort or another, but so far our trade journals have come out regularly.

Although the country is supposed to be on the verge of bankruptcy there seems to be plenty of money for investment, as well as for personal requirements. I hear that the Greengate Rubber Co.'s issue of new capital was quickly subscribed for, and there have been other concerns, including the St. Albans Rubber Works, which make the Grimston tire, that have done well in this respect. The Eastern produce firm of Harrisons & Crosfield, Limited, who are largely concerned with plantation rubber, have raised their capital to £2,525,000 and made an issue of 400,000 shares of 10 per cent cumulative preferred ordinary stock at £1 each, to be used for the general purposes of the business.

INTEREST IN COTTON MILLS CONTINUES.

The speculative boom in cotton mills shows no abatement and the Chancellor of the Exchequer is considering where he is to come in on the profits which are being made. With regard to the price of cotton goods, which will certainly not be easier in the near future, Mr. Ormrod, when presiding at the annual meeting of the Dunlop Rubber Co., mentioned that the price of cotton duck is now 400 to 500 per cent over pre-war prices. No doubt the new invasion of America by the Dunlop tire will receive due notice in THE INDIA RUBBER WORLD, and I shall not comment on it here.

RUBBER AND POLITICS.

The "Anti-Dumping Bill," to give it its popular name, will probably not be heard of again, as its provisions are distasteful to Protectionists and Free Traders alike. Quite probably it will be replaced by a simpler measure dealing with the so-called "key industries" alone. This will mean that such few rubber goods as we import into this country will be able to come in without irksome formalities. Mr. Justice Sankey's ruling that the banning of imported goods by the Board of Trade is illegal has naturally made a big stir and much interest is centered upon the government's appeal to the House of Lords. Pending this appeal, banned goods, interesting to rubber manufacturers, notably zinc oxide and lithopone, will be allowed in, but importers are warned that if the government's appeal succeeds, the importers will have to face the consequences of their action.

I have not heard from any unbiased source whether the zinc oxide now being made in England is quite equal to that which used to come from the Vicille Montague Co. on the Continent, or whether it is only on a par with what used to be obtained from America, this latter never having been considered equal to the continental, though it had an advantage in price. Now that the use of lithopone as a substitute for zinc oxide has become so firmly established, the latter is not likely to be in the same general demand as in pre-war days. An important point with regard to the present unrestricted import of zinc oxide and lithopone is that the government is not in a position to restrict importation from countries affected by a collapse in exchange, unless or until enabling legislation for the purpose is enacted by Parliament.

ADVISORY COMMITTEE FOR AERONAUTICS.

A preliminary report on the variation of the hydrogen permeability of rubber membranes with alteration in temperature was made to the above government committee during the war by D. B. Porritt and W. S. Allen, the work having been carried out by them in the research department of the North British Rubber Co. It was expected that the results of the investigation would prove of benefit both in the design of laboratory testing apparatus and as indicating the results which might be expected from an envelope under the ordinary condition of usage. A few previous experiments carried out at that National Physical Laboratory showed that the variation due to temperature amounts to about 7 per cent per degree centigrade. The plotted curve of the North British results show a consistent increase in permeability as the temperature rises. Thus the loss of hydrogen in liters per square meter per 24 hours was as follows:

Period of Time.	Temperature, Degrees.	Loss of Hydrogen in Liters.
24 hours	1.0 C.	2.26
24 hours	7.5 C.	3.31
24 hours	15.0 C.	4.56
24 hours	25.0 C	8.19

These results, the authors say, clearly illustrate the necessity for the careful regulation of temperature when testing balloon fabrics for gas tightness. They further show the increased loss of gas which must be experienced by airships in the summer months and point to the desirability of adopting every available precaution to keep the interior of sheds at a low temperature, whether by ventilation, refrigeration or by protecting the roof by some heat reflecting composition. The gas loss from the upper surface of a balloon fabric in sunshine, they say, must be very serious since the surface of the fabric will absorb a considerable amount of heat. Variations in atmospheric pressures are unimportant.

THE MACKINTOSH TRADE.

There is considerable demand for waterproofs, and many developments are noticeable compared with the trade of five years ago. Greater warmth is a feature which came in with the war. Thus we have the mackintosh with a detachable fleece lining, being adaptable for either summer or winter use. With regard to the high-class mackintoshes, lined throughout with white fur, put on the market by an important firm of London outfitters at a price in the neighborhood of 14 guineas, I doubt if the sales will continue to any extent now that trench warfare is a thing of the past.

These coats are uncomfortably hot to walk about in, though for standing about, or for driving in, when the weather is wet, as well as cold, they form an important addition to one's ordinary outfit. These coats do not seem to be very well known, as a proofer and maker-up of garments told me he had never seen or heard of one. An ordinary fur coat has, of course, a long life (moths permitting), but the ordinary vulcanized mackintosh has not, and it seems to me that the combination of the two, even though the fur is not the chinchilla variety at a guinea an ounce, must always remain an article of luxury for the wealthy. Another new feature is the triple-proof raincoat, i. e., a rain-proof coat interlined with rubber, the main object being greater warmth, this being the desideratum of both sexes.

TRADE NOTES.

The boot polish department of Wood-Milne, Limited, has been disposed of to Hargraves Bros. & Co., Limited, Hull. Now that the Wood-Milne company has become such a large concern in the tire world, it is not altogether surprising that business of less importance and of more competitive character should be disposed of to specialists.

It is announced that electric cables are to be made at Woolwich Arsenal. Various schemes have been mooted for the use

of spare government buildings for this or that trade purpose, and manufacturers interested have generally opposed them. It will be interesting to see if anything of the sort occurs in this case.

The report of the India Rubber, Gutta Percha and Telegraph Works Co., Limited, of Silvertown, shows a profit of £71,913, a reduction on last year. This is stated to be due to the various difficulties arising out of the reconstruction period, leading to a diminution in output.

At the annual meeting of W. & A. Bates, Limited, Leicester, when there was declared a profit of £42,972 and a dividend of 10 per cent for the year, the chairman, P. H. Lockhart, spoke at length on the importance of motor transport in the present congested state of the railways, saying that arrangements are being made to cover every town and village in the county by a motor system. Mr. Lockhart is now with Alex Johnstone and J. Tinto, a vice-president of the Federation of British Industries.

During a violent gale, which occurred on the day predicted for the end of the world, considerable damage was done to the Globe Rubber Works, Manchester, a huge shed about 200 feet long being lifted bodily from its supports and carried 20 or 30 feet by the wind until it crashed into the firm's offices.

William Symington & Co., Limited, 22 Fenchurch street, London, E. C. 3, has changed its name to "General Rubber Co., Ltd.," in order to have a uniform style for all branches in the various rubber-producing and consuming markets of the world.

Hale & Son, 10 Fenchurch avenue, London, E. C. 3, dealers in crude rubber, have taken William B. J. Horne into partnership. Mr. Horne has been associated with the firm for the last fourteen years.

While $25,000,000 worth of first-class American automobile tires were allowed to rot at Verneuil, France, according to the "American Economist," the British Government made arrangements by which the Hercules Tyre Co. will take over the sale of all the pneumatic tires and tubes discarded by the British army in France. Some of these have been sent to the French works, the others are returning by shiploads to England from Marseilles, Calais, Boulogne and St. Malo.

Liverpool imported from the United States in 1918 gutta percha of the value of $703,676, and manufactured rubber goods valued at $910,399, motor cars and rubber tires and tubes valued at $517,279, rubber shoes valued at $254,774, and waterproof garments worth $67,785.

BRITISH KEY INDUSTRIES TO BE PROTECTED.

THE IMPORTANT RESTRICTIONS intended to shield British industry during the period of demobilization and of change from war to peace conditions came to an end September 1, and the future trade policy of the United Kingdom as announced by the Prime Minister embraces three proposals of interest to the rubber industry of the world. They are that Parliament deal effectively with dumping; that it equip the Board of Trade with emergency powers to check a sudden and undue importation of goods at prices altogether below the cost of production in the United Kingdom, owing to the collapse of exchanges; also that the Board of Trade be empowered to prohibit the import, except under license, of goods which are in competition with key industries.

Their object is to defend the United Kingdom against unfair competition that might destroy certain unstable key industries that could not be maintained in the face of extensive dumping of foreign goods beneath the price at which they are sold in the country where produced, and of German goods at exchange rates so extravagantly in favor of Great Britain that the goods would sell at prices not only lower than those current in Germany, but lower than the cost of production in Great Britain. By unstable key industries is meant those essential for war or the maintenance of the country during war; those of inadequate producing capacity to meet the nation's war needs; those requiring Government aid in war time, and those unable without such aid to maintain themselves at the level of production shown by war to be essential to the national life.

That the British rubber goods manufacturing industry is essential for war is obvious, and that the United Kingdom desires to maintain its independence in the manufacture as well as the production of rubber is certain. The high American exchange rate is unfavorable to England, yet while the determination to abandon further support of exchanges may cause a further rise in American exchange, and will doubtless increase the cost of many raw materials obtained from America, it will also raise a higher barrier against the import of American manufactured goods which are considered essential to stimulate greater home production.

Thus far rubber products have not been specifically mentioned among the key industries to be protected, although certain raw materials used in the manufacture of rubber goods have been listed. Pending legislation, a general license under Prohibition of Import Proclamations will be issued by the Board of Trade, having effect as from September 1, 1919, and authorizing the importation into the United Kingdom of all goods not specified in a list consisting of synthetic drugs, organic chemicals and numerous miscellaneous commodities, the only items of prime interest to the rubber industry being zinc oxide and lithopone.

The preferential tariff dating from September 1 last, which explicitly favors goods coming from British colonies and possessions, takes the place of the war restrictions which expired in August. Under these restrictions foreign tires could not be imported free. The new tariff arranges that motor cars and parts thereof "from the colonies shall pay only two-thirds of the full rate." The British Rubber Tyre Manufacturers' Association, as its chairman declared at the annual meeting, made a big fight to prevent the restrictions from being removed on tires, then tried to have tires defined as "parts thereof" in the tariff, and now will endeavor to have tires included in the next budget as dutiable. He also declared that the British tire trade must be made as strong as the transatlantic competition, that no one concern could meet the coming demand and that all the manufacturers should work together. That Great Britain must right the balance as regards the consumption of rubber and that the bulk of British-produced rubber should be used in British factories. The Association is an amalgamation of British tire manufacturers, among them the Dunlop company, which has started an aggressive American campaign and is big enough to resemble a trust.

WHEN TANKS WERE FIRST USED IN THE WAR, THE BRITISH WAR Office originally intended to equip them with balata belting. Experiments by Sir William Trilton at Lincoln in August, 1915, put an end to that project.

RUBBER HAS BEEN SOLD IN LONDON AS FAR AHEAD AS 1923 AT 2*s.* 4½*d.* a pound ex warehouse. For 1920 and 1921 the price has been 2*s.* 6¼*d.*

A SWEDISH SYNDICATE IS BEING FORMED AT STOCKHOLM ON THE lines of the old East India Co. of Gothenburg, with a capital of 30,000,000 kroner[1], whose main object is to buy rubber and other plantations in the Dutch East Indies, to work them by modern methods and ship the products by steamer direct to Sweden.

[1]One krona equals $0.268 United States currency.

Rubber Planting Notes.

PLANT DISEASE ALARMS UNWARRANTED.

While admitting that the question of rubber diseases in the Far Eastern plantations is important and noting that everyone can see the marks of them on the trees and that the reason why many estates are reported to be immune is that they have not been examined scientifically, "The India-Rubber Journal" is inclined to be ironical about disease scares, ascribing much of their severity to the imagination of the local press in enumerating the successive scourges which have not interfered with the development of the plantations.

The first alarm was over *Fomes* and other fungi that attacked the roots; then came the black stripe canker which affected tapped trees; this was followed by *Ustulina,* and the latest is the brown bast disease, of which the cause is yet undiscovered. The pink disease alone so far, though ever present, has not aroused concern. So long as no leaf disease attacks *Hevea brasiliensis,* rubber producers need not fear.

RUBBER RESEARCH IN CEYLON.

Rubber research was interfered with by the calling away of investigators for war service. The Rubber Growers' Association did not favor the plan of having all research combined and directed from a central body in England. Plans are formed for training young men to inspect the rubber districts in the way the tea districts are now inspected. A book on "Rubber Research in Ceylon" is to be published soon; it is made up of the bulletins that have been issued by the Ceylon Research Commission.

The investigation of rubber diseases is kept up in Ceylon, Professor T. Petch at Peradeniya having received 232 specimens. He reports that brown bast has spread throughout all the rubber districts, though it is more common in the drier regions. The cause and nature of the disease has not yet been fully decided upon, and the measures taken to overcome it seem to have varying success in the different provinces.

INVESTIGATIONS OF HEVEA IN MALAYA.

Variation in the *Hevea brasiliensis* that grows in Malaya have been studied closely by Stafford Whitby, who gives the results in the "Annals of Botany." His investigations concerned the amount of rubber yielded by individual trees of the same age and growing under the same conditions, and also the possible relation between the girth of the trunk and the yield of rubber. About 1,000 seven-year-old trees in their third year of tapping on a normal plantation of about 13 acres, were under observation. As the seed from which the eastern plantations were grown was not selected seed the results are of particular interest.

Great variations were found in the rubber content of the latex of different trees, but the strength of the latex was constant for each tree, as a rule. Some trees yielded only 23 grams of rubber to 100 cubic centimeters of latex, and others yielded 54 to 55 grams; the mean of 243 trees examined was 36.58 grams to 100 cubic centimeters. Moreover, the older the tree the larger the rubber content; Mr. Whitby sets the yearly increase at ½ gram.

The yield of individual trees was found to be comparatively constant, a tree that was a high yielder at one time continued to be a high yielder through the two years of observation. The results were drawn from the examination of 1,011 seven-year-old trees. A large number of trees yielded from nothing to two grams a day, a few yielded over 27 grams; the average was 7.12 grams. Less than a tenth of all the trees yielded 28 per cent of the total, while over an eighth gave only 2.9 per cent of the yield, and certainly did not pay for tapping. Four exceptional trees yielded 41.45, 41.56, 41.72 and 42.77 grams a day. The possibilities of improving rubber yield by a proper selection of seeds seems clear.

The investigation into the girths, while it showed that trees with large trunks were good yielders and those with small trunks poor yielders, did not determine the matter clearly enough to justify destroying trees. The investigation of A. A. L. Rutgers in Sumatra, printed in the "*Archief voor de Rubbercultuur Nederlandsch-Indië,*" agree with Mr. Whitby's results.

It is not possible under present plantation conditions, where high and low-yielding trees are intermixed, to determine whether seeds from a high-yielding tree will produce other trees that are also high-yielding. To decide that, the young trees should be segregated so that the pollen from the poor yielders cannot fall upon them.

SCIENTIFIC RUBBER PLANTING IN INDO-CHINA.

At Saigon, in French Indo-China, an official rubber laboratory has been established as a branch of the local Pasteur Institute, with Dr. Lahille in charge of it. Governor-General Maspéro took on himself the responsibility of adding the money needed to the budget. The Scientific Institute of Indo-China has also been brought into being, whose agricultural department will supervise *Hevea* culture as one of its functions. Both laboratory and institute will work, so far as rubber is concerned, in close connection with the newly instituted rubber department of the Marseilles Colonial Institute, which is in charge of Dr. Van Pelt.

WHITE ANT EXTERMINATOR.

The termites or "white ants," as they are usually called, are troublesome pests on rubber plantations where they enter the roots of the trees and often excavate the stem. The depth of

DESTROYING WHITE ANTS ON A RUBBER PLANTATION.

the insect burrows varies from a few inches to four feet but the length is considerable in some cases, having been traced 300 feet from the nest.

Soil insecticides are said to be practically useless in exterminating these pests and fumigation is the only satisfactory method. A poisonous white ant powder is heated in a machine comprising a charcoal furnace, generating fumes that are forced into the burrows by means of an air pump. All openings being sealed with clay, the fumes will destroy the ants and eggs in a few days' time. (The Four Oaks Spraying Machine Co., Four Oaks, Sutton Coldfield, near Birmingham, England.)

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED DECEMBER 2, 1919.

NO. 1,323,259. Puncture-proof tire interliner. H. A. Falvey, Chicago, Ill.
1,323,457. Demountable rim for tires. L. De Holczer, Sioux City, Iowa.
1,323,466. Ear air douche. C. F. Gottfried, Brooklyn, N. Y.
1,323,487. Inking pad of sponge rubber. C. H. Payne, Cincinnati, Ohio.
1,323,610. Collapsible pneumatic mattress. G. B. Price, Topliff, Utah.
1,323,629. Rubber-tired rocker crutch. R. G. Hall, 616 Morgan Building, Portland, Ore. This invention was described in THE INDIA RUBBER WORLD July 1, 1918, page 607.
1,323,853. Surgical appliance. E. H. Galligan, Providence.
1,324,014. Stream-line shield for cables, stay wires, and the like. R. H. Upson, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

ISSUED DECEMBER 9, 1919.

1,324,165. Resilient tire. J. E. MacKay, Los Angeles, Calif.
1,324,282. Vehicle tire with inflatable inner tube having a confining layer of inelastic material extending transversely around it, but extending across the tube at the valve to provide a reinforced valve seat. E. Sterns, St. Louis, Mo., assignor by mesne assignments to Surety Tire & Rubber Co., Wilmington, Del.
1,324,368. Protective covering for pneumatic tires. C. Allen, Sydney, New South Wales, Australia.
1,324,369. Auxiliary tire as pneumatic tire protector. C. Allen, Sydney, New South Wales, Australia.
1,324,400. Heel retainer. J. E. Ludlam, Bridgeport, Conn.
1,324,695. Tire tread. L. Schissel, Brooklyn, N. Y.
1,324,723. Fountain pen. B. B. Bradford, Fort Madison, Iowa.
1,324,730. Animal head with rubber lined mouth, for fur pieces, etc. T. Cohen and M. Lichtenstein—both of New York, N. Y.

ISSUED DECEMBER 16, 1919.

1,324,941. Air-cooled vehicle tire with rubber blocks in air chambers. T. C. Watkins, Ingram, Pa.
1,324,993. Rubber heel. W. C. Belknap, assignor to R. E. Miller, Inc.—both of New York, N. Y.
1,325,012. Low air pressure signal for tires. D. D. Getman, White Butte, S. D.
1,325,017. Wind shield wiper. L. C. Hill, assignor to Packard Motor Car Co.—both of Detroit, Mich.
1,325,019. Relief valve for pneumatic tires. C. A. Hussey, Battle Creek, Mich.
1,325,141. Reinforced pneumatic tire. H. G. Cave, New York, N. Y.
1,325,233. Pneumatic tire with three air chambers separated by rubber webs. J. D. Cooper, assignor of one-third to W. Parsons—both of Toronto, Ontario, Canada.
1,325,364. Reinforced tire. J. G. Lowe, Shelby, Ala.
1,325,367. Rubber heel. C. T. Maddock, Elyria, assignor of one-half to J. G. Schullian, Cleveland—both of Ohio.
1,325,389. Anti-skidding attachment for tires, with rubber blocks. J. B. Adduci, Boston, Mass.
1,325,391. Rubber hand stamp. E. S. Burroughs, Liverpool, England.
1,325,392. Fountain pen. G. T. Byers, Nyack, N. Y.
1,325,443. Fountain pen. F. W. Lee, Spokane, Wash.
1,325,448. Non-metallic wall for reservoirs having an inner coating of material insoluble in the lighter hydrocarbons and an outer self-sealing envelope composed of a layer of non-vulcanized rubber between two sheets of vulcanized fabric. A. Macbeth, assignor to Société The Dunlop Rubber Co., Limited—both of Paris, France.

REISSUES.

14,770. Demountable rim for tires. H. Bretscher, New York, N. Y., assignor of one-half to Felix Spitzner.

ISSUED DECEMBER 23, 1919.

1,325,607. Bather's wrist appliance to serve as pocket. E. H. Barber, Worcester, Mass.
1,325,695. Resilient heel. L. T. Fay, assignor to The Fay Rubber Products Co.—both of Elyria, Ohio.
1,325,714. Demountable rim. W. E. Copithorn, Natick, Mass.
1,325,717. Garter. R. Gorton, Brookline, Mass.
1,325,798. Patch fabric and method of manufacture. J. G. Moomy, Erie, Pa.
1,325,822. Rubber heel for shoes. G. F. Wells, Elyria, Ohio.
1,325,833. Rubber cushion wheel. W. H. Damon, Los Angeles, Calif.
1,325,844. Fountain pen. H. S. Hasselquist, Chicago, Ill.
1,325,903. Device for cleaning windshields. C. B. O'Neill, Clymer, Pa.
1,325,918. Tire valve and alarm. F. H. Valiton, Deer Lodge, Mont.
1,326,090. Demountable rim for tires. L. H Perlman, New York, N. Y.
1,326,145. Windshield wiper. G. I. Stadeker, Chicago, Ill. For description see THE INDIA RUBBER WORLD, November 1, 1918, page 89.
1,326,154. Pneumatic tire. J. A. Johnson, Greenfield, assignor, by direct and mesne assignments, to J. W. P. Tire Company—both of Indianapolis, Ind.

ISSUED DECEMBER 30, 1919.

1,326,180. Tire lock. W. T. Campbell, St. Louis, Mo.
1,326,206. Fountain pen cap. C. A. Luck, assignor to The Conklin Pen Manufacturing Co.—both of Toledo, Ohio.
1,326,250. Hose coupling. A. J. Brown, Union Hill, N. J., and A. A. Somerville, Flushing, N. Y., assignors to New York Belting & Packing Co., New York City.
1,326,418. Demountable rim. C. L. Peters and A. L. Johnson, assignors to Two Part Rim Company, Inc.—all of Worcester, Mass.
1,326,437. Motor vehicle wheel. C. V. Boys, Westminster, England.
1,326,444. Tire. J. Faske, Detroit, Mich.
1,326,445. Pneumatic or air valve for inflating various bodies. T. H. Fewlass, Detroit, Mich.
1,326,455. Dust cap for tire valves. P. W. Kautzman, West Hoboken, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.
1,326,542. Shoe-toe protector of vulcanized rubber and fabric. A. L. Stebor, Jr., Plainfield, N. J.

THE DOMINION OF CANADA.

ISSUED DECEMBER 2, 1919.

194,338. Wheel rim. L. L. Broyles, Vancouver, Washington, U. S. A.
194,347. Patch for tires. J. N. Davis, Denver, Colorado, U. S. A.
194,376. Tire having means for carrying air under super-atmospheric pressure. W. Huber, Ottawa, Ontario, Canada.
194,475. Disk wheel with pneumatic tire. The Interlocking Rim and Wheel Company, assignee of L. B. Harvey, both of San Francisco, Calif., U. S. A.
194,484. Rubber heel. R. E. Miller, Inc., assignee of Wilber C. Belknap—both of New York City, U. S. A. For description see THE INDIA RUBBER WORLD, December 1, 1919, page 157.

ISSUED DECEMBER 9, 1919.

194,517. Renewable tread for tires. J. H. Gill and J. D. Rea—both of Dunedin, New Zealand.
194,611. Wheel with demountable rim. C. F. Rubsam, New York City, U. S. A.
194,630. Demountable wheel rim. E. Oliver, Daytona, Florida, U. S. A.
194,642. Respirator. I. W. Paul and C. Hall—both of Pittsburgh, Pa.
194,651. Pneumatic tire. H. Bretscher, New York City, U. S. A.
194,668. Demountable wheel rim. E. Eggimann, Madison, Wis., U. S. A.
194,683. Pneumatic suspension for vehicles. J. Hofmann, Aiken, South Carolina, U. S. A.
194,689. Pneumatic tire. E. A. Jones, Los Angeles, Calif., U. S. A.
194,691. Rubber tire. E. B. Killen, London, E. C. 4, England.
194,707. Demountable tire rim. J. H. Miskimen, Glendive, Montana, U. S. A.
194,714. Pneumatic tire. W. D. McNaull, Toledo, Ohio.
194,729. Rubber shoe sole of fabric and composition. J. Solomon, Oberlin, Ohio, U. S. A.
194,732. Hose coupling. A. E. Stove, London, England.
194,738. Dual pneumatic wheel rim. E. C. Walters, Akron, Ohio, U. S. A.
194,772. Hose coupling. The Independent Pneumatic Tool Co., Chicago, assignee of J. T. Nelson, Aurora—both in Illinois, U. S. A.
194,778. Piston packing. H. W. Johns-Manville Co., assignee of G. Christenson—both of New York City, U. S. A.
194,779. Piston packing. The H. W. Johns-Manville Co., assignee of G. Christenson—both of New York City, U. S. A.
194,780. Packing ring of rubber and fiber. The H. W. Johns-Manville Co., assignee of G. Christenson—both of New York City, U. S. A.
194,793. Detachable wheel rim. The Rapid Remountable Rim Co., assignee of O. P. Edstrom—both of San Francisco, Calif., U. S. A.
194,803. Hose coupling. The S. S. White Dental Mfg. Co., Philadelphia, Pa., assignee of W. R. Porter, Prince Bay, N. Y.—both in U. S. A.

ISSUED DECEMBER 16, 1919.

194,836. Rubber shoe sole. J. C. Jardine and J. Dickie—both of Summerside, Prince Edward Island, Canada.
194,846. Spring tire. W. Ashcroft, Garson Quarry, Manitoba, Canada.
194,848. Spring tire. H. C. Babel, Buffalo, N. Y., U. S. A.
194,876. Tire with sponge rubber core and air chamber. A. A. Crozier, London, England.
194,877. Tire with sponge rubber core and air chamber. A. A. Crozier, London, England.
194,878. Pneumatic tire of treated, rubber-coated rawhide. A. A. Crozier, London, England.
194,891. Automobile tire rim. E. P. Dill, Pittsburgh, Kansas, U. S. A.
194,920. Resilient tire. J. Jozak, Milwaukee, Wis., U. S. A.
194,938. Demountable rim for tires. H. P. Mulcahy, East Fremantle, Western Australia, Australia.
194,943. Demountable tire rim. W. W. McRea, Waikarim Canterbury, N. Z.
194,988. Pneumatic tire. W. N. Stephens, Toronto, Ontario, Canada.
195,008. Tire tube. H. N. Wayne, Los Angeles, Calif., U. S. A.
195,045. Cushion tire. The Lambert Multiplus Co., assignee of H. M. Lambert—both of Portland, Oregon, U. S. A.
195,075. Pneumatic tire. Peter Malacos and M. Bratsis, assignee of a half interest, both of Wheeling, West Virginia, U. S. A.

ISSUED DECEMBER 23, 1919.

195,105. Demountable rim for tires. F. Spranger and N. M. Spranger—both of Detroit, Mich., U. S. A.
195,118. Listening apparatus with pneumatic cushions. A. Bloch, Paris, France.
195,121. Pneumatic tire. T. Bradshaw, Oakland, Calif., U. S. A.
195,193. Demountable tire rim. E. A. Jones, Los Angeles, Calif., U. S. A.
195,194. Demountable tire rim. E. J. Jones, Los Angeles, Calif., U. S. A.
195,211. Surgical bust substitute. L. A. Meileue, British Columbia, Canada.
195,251. Stopper for rubber bath tubs, etc. M. C. Schweinert, West Hoboken, N. J., U. S. A.
195,296. Stethoscope. J. D. Pollard, Chicago, Ill., U. S. A.

ISSUED DECEMBER 30, 1919.

195,401. Pneumatic tire. J. F. Beeselman, East Chicago, Ill., U. S. A.
195,403. Spring tire. L. F. Biesmeyer, Quamois, Mo., U. S. A.
195,411. Collapsible rim for tires. J. A. Brereton, Toronto, Ontario, Canada.

Chemical Patents will be found on page 291. Machinery Patents on page 298.

195,430. Spring tire. A. A. Culbertson, Topeka, Kansas, U. S. A.
195,443. Tire casing. J. W. H. Dew, London, E. C., England.
195,477. Tire tube. A. E. Henderson, Toronto, Ontario, Canada.
195,462. Rubber-covered pedals for automobiles. (See THE INDIA RUBBER WORLD, October 1, 1918, page 33.)
195,506. Resilient vehicle tire. C. V. Merling, Centralia, Washington, U. S. A.
195,539. Cigarette and cigar cases. F. S. Russell, Glasgow, Scotland.
195,552. Pneumatic mattress. M. G. Stevenson, Orange Lake, Florida, U. S. A.
195,555. Gas Mask. M. Stogran, Cowan, Manitoba, Canada.
195,560. Demountable tire rim. B. T. Amburello, New York City, U. S. A.
195,628. Demountable tire rim. The Lightning Change Rim Corporation, Berrien Springs, Michigan, assignee of C. B. Deeds, Savanna, Ill., both in U. S. A.
195,629. Collapsible rim. The Lightning Change Rim Corp., Berrien Springs, Michigan, assignee of C. B. Deeds, Savanna, Ill., both in U. S. A.

THE UNITED KINGDOM.

ISSUED DECEMBER 3, 1919.

133,226. Reversible elastic heel pad with an interchangeable packing piece of rubber, etc. A. W. Oliver and F. Jennings, 35 New Cavendish street, London.
133,253. Filer pad to arch instep, attached by elastic bands. J. Chorlton, Staleywood, Mottram Old Road, and P. Hollingworth, 1 Knowl street—both in Staleybridge, Cheshire.
133,264. Tire valve. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A.
133,348. Kite balloon with ballonet. E. Prassone and L. Avorio, Savoy Hotel, London.
133,349. Captive kite balloon with gas container formed as a spheroid, ellipsoid, ovoid, etc., instead of a sphere. E. Prassone and L. Avorio, Savoy Hotel, London.
133,421. Dual tread spring wheel with continuous outer resilient suspension ring embedded in rubber and fitted with rubber treads. W. Heggie, 11 Georges Quay, Dublin.

ISSUED DECEMBER 10, 1919.

133,431. Renewable tread for pneumatic tire. J. H. Gill, J. D. Rea, and L. Sanderson, 40 Dowling street, Dunedin, New Zealand.
133,533. Fountain pen containing solid ink, etc. A. D. Moll, 35 Faunce street, Kensington, London.
133,547. Detachable rim for tires. A. E. Alexander, 306 High Holborn, London. (General Rim Co., 47 West 34th street, New York City, U. S. A.)

ISSUED DECEMBER 17, 1919.

133,832. Rubber and rubber-impregnated canvas sole for boots. J. E. Grosjean, 121 West Market street, Lima, Ohio, U. S. A.
133,855. Stand for drying painted golf balls. D. Conacher, 28 Royal Exchange Square, Glasgow.
133,863. Demountable rim for tires. B. F. C. Haanel, 236 First avenue, Ottawa, Ontario, Canada
133,871. Device for fastening boots or shoes with two side openings closed by elastic laces which permit removal without unfastening. L. Fullarton, 76 Dockhead street, Saltcoats, Ayrshire.
133,899. Tread band of fabric and rubber for pneumatic tires. T. Bradshaw, 263 Newton avenue, Oakland, Calif., U. S. A.
133,909. Hose coupling. W. Shackleton, 50 Cameron street, and J. J. Coggans, 50 Lauderdale Gardens, Hyndland—both in Glasgow.
133,932. A heel with core of wood, cork, etc., covered with vulcanite, rubber, or rubber and canvas compound molded thereon and vulcanized.
134,025. Wound dam of rubber. W. H. Taylor, 44 Summerhill Gardens, Toronto, Canada.
134,030. Suction denture with soft rubber annular suction disk. A. W. Fisher, Bryn Estyn, Whitchurch, Shropshire.

ISSUED DECEMBER 24, 1919.

134,080. Detachable heel for boots. C. P. Maher, 1836 Hutchison street, and E. J. Fetherstonhaugh, 286 St. James street—both in Montreal, Canada.
134,145. Rubber sole for boots. J. C. Jardine and J. Dickie, Summerside, Prince Edward Island, Canada.
134,165. Revoluble heel pad for boots. F. E. Freeman, 23 Lansdown Parade, Cheltenham, Gloucestershire.
134,317. Wheel tire composed of inflated rubber balls packed into an ordinary tire cover. J. M. Cooper, 63 Cumballa Hill, Bombay, India.

ISSUED DECEMBER 31, 1919.

134,407. Coupling for attaching inflating tube to a tire valve comprising a rubber bush to fit over valve stem. Wood-Milne, Limited, and W. E. Miller, Albion street, Gaythorn, Manchester.
134,420. Securing device for rubber heels, shoe buttons, etc. A. Nixon, 34 Deramore street, Great Western street, Rusholme, Manchester.
134,421. Rubber sole provided with reinforcing material which affords a hold for nails, to permit attachment. F. A. Nolan, 216 New York Life Building, St. Paul, Minn., U. S. A.
134,424. Driving belt of open mesh fabric filled with rubber. A. Cairns and T. W. Cairns, 22 Bessborough Road, Oxton, Birkenhead.
134,432. Respirators. Conde de Ramirez de Arellano, Batchelor's Farm, near Horsham, Sussex.
134,437. Stuffing-box substitutes of rubber, etc. A. E. I. Scanes, Strathfield, Harboro' Road, Ashton-on-Mersey, T. Brighouse, 5 Grosvenor street, Stretford, Manchester, and British Westinghouse Electric & Manufacturing Co., 2 Norfolk street, Strand, Westminster.
134,488. Tire valve. C. Marsh, 41 Francis Terrace, Lovely Lane, Warrington, Lancashire.

GERMANY.

PATENTS ISSUED, WITH DATES OF APPLICATION.

317,641. (April 16, 1916.) Artificial arm. Allgemeine Krankenhaus-Einrichtungs Geschellschaft m. b. H., 20-21 Johannisstrasse, Berlin, and Karl Albert Scherer, 113 Hartwigstrasse, Berlin-Pankow.
317,695. (April 25, 1917.) Packing with rubber ring, particularly for coolers with interchangeable parts. Süddeutsche Kuhlerfabrik, Feuerbach, Württenberg.

TRADE MARKS.

THE UNITED STATES.

NO. 113,368. The word ENDURANCE—rubber composition soles, half-soles, and heels. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.
113,369. The word SPEED—rubber and composition soles, half-soles, and heels. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.
115,139. The word ALWRITE—fountain pens, etc. A. T. Cross Pencil Co., Providence, R. I.
116,595. Representation of a stone against a wheel with a tire on it—boots, overshoes, pacs, gum shoes, arctics, and gaiters, of rubber and fabric or felt. Firestone Tire & Rubber Co., Akron, O.
116,618. The word AMERICAN—game balls of all kinds having rubber bladders or cores, rubber home-plates, etc. Simmons Hardware Co., St. Louis, Mo.
116,659. Representation of a life-saver behind the word TEETHSAVER—toothache gum, etc. The F. M. Keeler Co., Boston, Mass.
117,282. The word KIPPY—boots and shoes made wholly or partly of leather, rubber, or fabric. Slater & Morrill, Inc., South Braintree, Mass.
118,446. Representation of a label bearing inside of scroll-work a lady's boot with an elastic gusset—elastic gusset webs. W. Preston & Son, Limited, Leicester, England.
119,163. Representation of two Brownie-type figures with the words "MOORE'S FOUNTAIN PENS" between—fountain pens. The Moore Pen Co., Boston, Mass.
119,301. The words MI BABI DAINTI—sanitary baby pants. M. S. George, St. Louis, Mo.
119,302. The words MI LADI DAINTI—ladies' sanitary aprons, etc. M. S. George, St. Louis, Mo.
119,460. The words E-Z BLOW—toy balloons. The Western Reserve Rubber Co., Kenmore, O.
121,042. The word RAILROAD—tires. Ira V. Humphrey, Philadelphia, Pa.
121,466. Representation of a yellow panel bearing a star within a diamond above a facsimile of the signature "EBERHARD FABER" and the printed words EBERHARD FABER, NEW YORK, OLDEST PENCIL FACTORY IN AMERICA—erasers, rubber bands, etc. Eberhard Faber, New York and Brooklyn, N. Y.
121,644. Representation of a tire within which a comic face is formed by fancy lettering of the word SHURFIX and the words LAUGHS AT PUNCTURES—filler for pneumatic tires. Shurefix Manufacturing Co., Seattle, Wash.
121,882. The word THRIFT—rubber and canvas shoes. United States Rubber Co., New York City and New Brunswick, N. J.
121,900. The letters and word O AND G—rubber belting, hose, machinery packing, etc. Imperial Belting Co., Chicago, Ill.
121,948. The word SCULPTÉ—hollow and solid rubber tires for heavy and other vehicles, rubber covers and casings for tires, all with anti-skid rubber ribs. Société Generale des Etablissements Bergougnan, Clermont-Ferrand, France.
122,375. The word USCO—rubber and rubber and fabric gloves and bathing caps. United States Rubber Co., New Brunswick, N. J., and New York City.
122,633. A white disk on the end of a fountain pen—fountain pens. The Evans Dollar Pen Co., Waterloo, Ia.
122,885. The words PARA-TITE—material for patching pneumatic tires, inner tubes, and other rubber articles. The Federal Rubber Co., Cudahy, Wis.
123,408. The word GRAINSTER on a shield—fabric and rubber conveyer belts. United States Rubber Co., New Brunswick, N. J., and New York City.
124,770. The word MCGRAW—rubber tires and tubes. The McGraw Tire & Rubber Co., East Palestine, O.

DESIGNS.

THE UNITED STATES.

NO. 54,229. Rubber sole-pad for boots and shoes. Patented December 2, 1919. Term 14 years. L. R. Bandler, New York City, assignor by mesne assignments to Pioneer Products, Inc., Malone—both in New York.
54,230. Rubber sole-pad for boots and shoes. Patented December 2, 1919. Term 14 years. L. R. Bandler, New York City, assignor by mesne assignments to Pioneer Products, Inc., Malone—both in New York.
54,231. Rubber heel-pad for boots and shoes. Patented December 2, 1919. Term 14 years. L. R. Bandler, New York City, assignor by mesne assignments to Pioneer Products, Inc., Malone—both in New York.
54,236. Tire casing. Patented December 9, 1919. Term 14 years. F. H. Brewster, assignor to The Madison Tire & Rubber Co., Inc.—both of Buffalo, N. Y.
54,237. Tire casing. Patented December 9, 1919. Term 14 years. F. H. Brewster, assignor to The Madison Tire & Rubber Co., Inc.—both of Buffalo, N. Y.
54,246. Tire casing. Patented December 9, 1919. Term 14 years. F. S. Dickinson, New York City.
54,247. Tire casing. Patented December 9, 1919. Term 14 years. F. S. Dickinson, New York City.
54,248. Tire casing. Patented December 9, 1919. Term 14 years. E. N. Downes, Charlotte, N. C.
54,255. Tire. Patented December 9, 1919. Term 7 years. C. C. Gates, Denver, Colo.
54,261. Tire. Patented December 9, 1919. Term 14 years. E. Hopkinson, New York City.
54,262. Tire. Patented December 9, 1919. Term 14 years. G. Hubach, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.

54,263. Tire. Patented December 9, 1919. Term 14 years. G. Hubach, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.

54,264. Tire. Patented December 9, 1919. Term 14 years. G. Hubach, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.

54,273. Tire cover. Patented December 9, 1919. Term 14 years. P. M. Lockwood, Kansas City, Mo.

54,274. Tire cover. Patented December 9, 1919. Term 14 years. P. M. Lockwood, Kansas City, Mo.

54,275. Tire cover. Patented December 9, 1919. Term 14 years. P. M. Lockwood, Kansas City, Mo.

54,276. Tire. Patented December 9, 1919. Term 7 years. C. W. McKone, assignor to The Gordon Tire & Rubber Co.—both of Canton, O.

54,278. Tire. Patented December 9, 1919. Term 14 years. C. E. Murray, Jr., assignor to Empire Rubbber & Tire Co.—both of Trenton, N. J.

54,281. Tire. Patented December 9, 1919. Term 14 years. F. C. Plouf, Minneapolis, Minn.

54,286. Tire. Patented December 9, 1919. Term 7 years. C. Spreckels, Coronado, assignor to The Savage Tire Co., San Diego—both in California.

54,287. Tire. Patented December 9, 1919. Term 7 years. C. Spreckels, Coronado, asssignor to The Savage Tire Co., San Diego—both in California.

54,290. Tire casing. Patented December 9, 1919. Term 14 years. K. H. Stubenvoll, assignor to Gillette Rubber Co.—both of Eau Claire, Wis.

54,291. Tire. Patented December 9, 1919. Term 7 years. J. Tenney, Jr., Plainfield, N. J.

54,306. Tire tread. Patented December 23, 1919. Term 14 years. F. E. Burrall, assignor to Liberty Tire & Rubber Co.—both of Green Bay, Wis.

54,318. Pneumatic tire. Patented December 23, 1919. Term 14 years. A. Hargraves, Akron, O., assignor to Proehl Tire & Rubber Co., Chicago, Ill.

54,321. Tire tread. Patented December 23, 1919. Term 14 years. H. L. Kenyon, Satauket, N. Y.

54,324. Tire. Patented December 23, 1919. Term 14 years. J. W. Maguire, assignor to The Brunswick-Balke-Collender Co.—both of Chicago, Ill.

54,329. Tire. Patented December 23, 1919. Term 14 years. G. Nowick, Kansas City, Mo.

54,330. Tire casing. Patented December 23, 1919. Term 7 years. W. C. Owen, Cleveland, O.

54,337. Tire. Patented December 23, 1919. Term 3½ years. F. W. Smith, Rutherford, N. J.

54,345. Square tire. Patented December 23, 1919. Term 7 years. T. Zeger, Sharpsburg, Pa.

JUDICIAL DECISIONS.

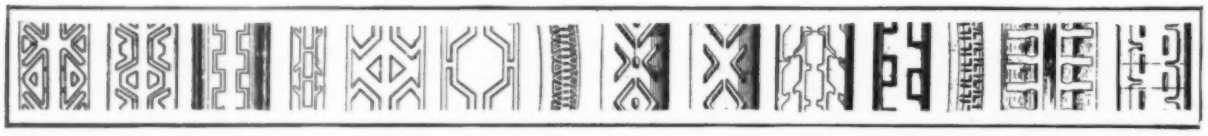
GENERAL ELECTRIC CO. *vs.* CONTINENTAL FIBRE CO.—United States Circuit Court of Appeals, Second Circuit, February 13, 1919.

Infringement of Patent No. 1,061,770. Miller made a gear or cog-wheel of highly compressed cotton, held under compression by metallic end plates secured by rivets passing through the cotton. Defendant makes disks of cotton duck impregnated with bakelite, 60 per cent duck and 40 per cent bakelite, which can be cut into gears. Held that, when used for gears, it violated Miller's Patent. ("The Official Gazette," United States Patent Office, November 4, 1919.) ("Federal Reporter," Volume 256, page 660.)

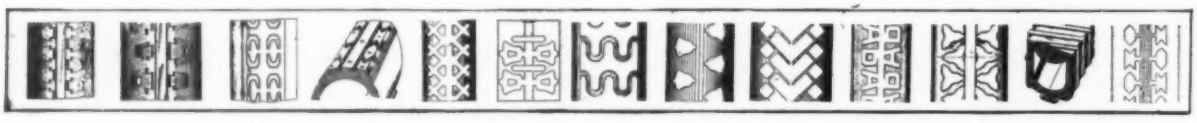
HIGH COURT OF JUSTICE—Chancery Division. Before Mr. Justice Sargant. November 13, 1919.

In the matter of Muir's Patent. Petition for extension. This is a device for absorbing the shock to a vehicle from striking the road, by means of arranging a vacant space around the hub, which is partly filled with balls or rollers or other forms of wood or metal. The hub may be cushioned with rubber or other resilient substance. The invention may do away with the need for pneumatic tires and is now employed on motor omnibuses, motor trucks and on heavy cars, so that solid rubber tires may be fitted instead of pneumatic tires. The Court extended the patent for seven years. ("Supplement, The Illustrated Official Journal [Patents]," London, England, December 17, 1919.)

In re MUTUAL MOTORS CO. Petition of FIRESTONE TIRE & RUBBER CO.—District Court, Eastern Division of Michigan, Southern District, July 22, 1919.



54,236 54,237 54,255 54,262 54,263 54,264 54,276 54,286 54,287 54,291 54,321 54,324 54,337 54,347



54,246 54,247 54,248 54,261 54,278 54,281 54,290 54,306 54,318 54,329 54,330 54,345 54,348

54,347. Tire casing. Patented December 30, 1919. Term 7 years. J. D. Comstock, assignor to The Cord Tire Corp.—both of Chester, W. Va.

54,348. Tire. Patented December 30, 1919. Term 7 years. H. G. Egbert, Dayton, O.

THE DOMINION OF CANADA.

4,689. Tire tread. Patented November 25, 1919. The Gregory Tire & Rubber Co., Limited, Vancouver, B. C.

4,694. Clamp for windshield wings. J. C., J. J., and E. E. Palmer, trading as Royal Simplex Wind Deflector Co., Toronto, Ont.

CHEMISTS AVAILABLE FOR RUBBER WORK.

The Chemical Warfare Service of the War Department has established an employment bureau under the charge of Major Frederick M. Crossett as director, which is ready to supply skilled chemists to any business that requires their services.

The Government employed 5,400 chemists during the war, who could not hope to obtain honors or distinction for their work. Many of these are unable to go back to the work they did before, owing to the changed conditions. The director has a list of chemists who can be used in the rubber industries.

On the Mutual Motors Co. becoming bankrupt, the Firestone Tire & Rubber Co. endeavored to regain tires and other rubber goods that were in the possession of the Mutual Motors Co., claiming that they had been sold on consignment. The Court, Tuttle, J., delivering the opinion, held that the sale was absolute. Petition not granted. ("Federal Reporter," Volume 260, page 341.)

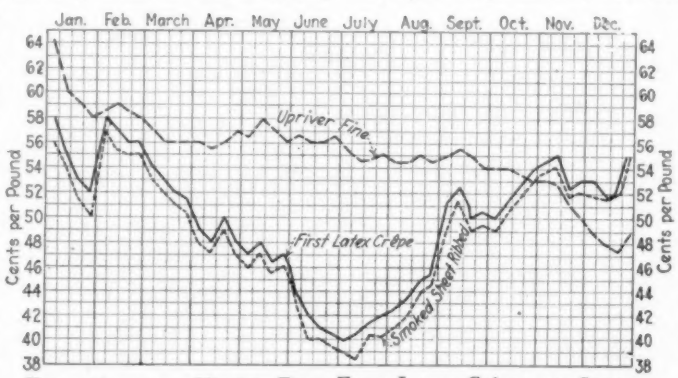
THE METRIC SYSTEM EXPLAINED.

Learn only the units, dollar, meter, liter, gram—dollar, the measure of value; meter, the measure of length; liter, measure of bulk; gram, for weight. You know all about the American dollar. The metric units, meter, liter, gram, are just like dollar, divided decimally and multiplied decimally. If you want to compare metric units with present units, the meter is 10 per cent more than the yard; 500 grams is about 10 per cent more than the pound avoirdupois, the liter is 5 per cent less than the United States liquid quart (13 per cent less than the British liquid quart).

The Spot Crude Rubber Market During 1919.

AS WAS ANNOUNCED in the middle of December, 1918, government restrictions on rubber imports were removed in January and at the same time the armistice began to set ocean transport free so that a decline in prices was to be looked for with the increase in supply. During January, first latex crêpe dropped gradually from 58 cents on January 7 to 52 cents on January 27 and ribbed smoked sheet dropped with it from 56 cents to 50 cents, while the price of upriver fine went from 64¼ cents down to 58 cents.

Early in February large orders were placed by manufacturers, the demand for plantations was active and it seemed as if prices would go up again. The spurt was followed by a reaction which sent the price down steadily not only to the end of the month, but until the middle of the summer, when, aided by large arrivals, the bottom price of the year, 40 cents, was reached. On February 4 first latex crêpe was 58 cents again, as was upriver fine; on February 27 the prices were 55 cents for first latex crêpe and 58 cents for upriver fine.



FLUCTUATIONS OF UPRIVER FINE, FIRST LATEX CRÊPE AND SMOKED SHEET RIBBED SPOT RUBBER DURING 1919.

During March the market was stagnant, there was little demand from buyers, and prices continued to go down. The Pará rubbers reached the level of between 55 and 56 cents, at which upriver fine remained for several months, further decline being checked partly by the holding back of rubber exports by Brazilian financial institutions. First latex crêpe which was 55 cents on March 4 sold for 51½ cents on March 28 and ribbed smoked sheets kept at one cent below the latex price.

In April the market continued dull, plantation grades declined steadily owing to heavy arrivals and little demand. On April 4 first latex crêpe sold for 49 cents. In the middle of the month there was a little animation which sent the price up to 50 cents, but by April 29 it was down again to 48 cents. Some demand for Pará kept the price of upriver fine at 56 cents.

May again was dull for crude rubber, though the price of plantations kept steady owing to oversupply. On May 3, first latex crêpe was at 47 cents; it rose to a cent above, sank to half a cent lower, and by May 28 was at 47 cents again. Upriver fine selling for 56 cents at the beginning of May, rose to 58 cents and dropped again to 56½ cents at the close of the month.

The same story of dull markets is true for June, except that the price of plantations dropped sharply; on June 7 first latex crêpe sold at 44 cents, by June 28 it was selling at 40 to 41 cents. The Pará prices were kept steady, upriver fine staying at 56 to 56½ cents in New York, while 66 cents was asked for it in Pará.

In July the bottom was reached for plantation rubber, arrivals were heavy, manufacturers would not buy and holders would not sell at the prevailing prices, as they expected Germany to but heavily, so first latex crêpe reached 40 cents and ribbed smoked sheets 38½ cents; by the end of the month, however, prices had started on the upward course in which they were to continue during the rest of the year. July 1 latex crêpe sold for 42½ cents, July 31 it had returned to 42 cents. Upriver fine sank also a little with the plantation rubbers, selling for a time at 54½ cents; July 1 it was at 55 cents and also on July 31.

During August the market improved slowly, but steadily; manufacturers began to buy and prices were firm, though there was plenty of rubber on hand. August 1 first latex crêpe sold for 41½ cents; August 25 it sold for 45½ cents. The Pará market was quiet with upriver fine at 54¾ cents at the beginning and close of the month.

With September a remarkable advance began in plantations, which with some breaks, continued to the end of 1920. Manufacturers of tires and of all rubber goods bought heavily and seemed ready to pay any price for the rubber they wanted. While there was speculation, the demand came from consumers. First latex crêpe at 45½ cents on August 30 sold for 51½ in the first week and 52½ in the second week of September and was selling for 50½ on September 29. The Brazil market was quiet and inactive, with upriver fine at 55 cents on September 6 and at 54 cents on September 29.

Throughout October the market continued firm with increasing demand from the factories for plantation, while the Brazilian market was practically dead. During the month the prices of both latex crêpe and smoked sheets rose above that of upriver fine. October 3 the price of first latex crêpe was 50 cents, on October 31 it was 54 cents; at the same date ribbed smoked sheets were 53 cents. Upriver fine was quoted at 54 cents on October 3 and at 53 cents on October 31.

The rise in plantations continued till the middle of November, when there came a temporary drop. The demand of the manufacturers fell off and prices were affected also by the drop in sterling exchange. First latex crêpe at 54 cents on November 1 rose to 55 cents the next week and then dropped, standing at 52½ cents on November 27. There was a like drop in Pará, upriver fine selling at 53½ cents November 1 and at 51 cents November 27.

The crude rubber market continued steady throughout December, taking a sudden rise for plantations in the last week. The steadiness was attributed in part to the firm handling of the Singapore and London markets, but it was due also to the continued demand. December 2 the price for first latex crêpe was 53 cents, December 31 it was 55 cents. It is remarkable that ribbed smoked sheets sold for the same as first latex crêpe, 52½ to 53 cents on December 2, and 55 cents on December 31. There was a further drop in Brazilian rubber, upriver fine selling for 49 cents on December 2 and 31, but having sunk to 47½ cents in the interval.

Upriver fine, which sold at 64¼ cents at the beginning of January, 1919, had fallen to 49 cents on December 31; first latex crêpe sold at 58 cents on January 1, and at 55 cents on December 31, and ribbed smoked sheets at 56 cents on January 1, and 55 cents on December 31.

RUBBER ESTATES IN THE STRAITS SETTLEMENTS, WHICH HAVE depended heretofore wholly on cheap coolie labor, are now considering the use of agricultural machinery, such as tractors and harvesters, because there is a shortage of the labor and a general shortage of rice, the principal food throughout the Far East.

Review of the Crude Rubber Market.

NEW YORK.

THE CRUDE RUBBER MARKET, after declining slightly in the first week of January remained very steady throughout the month, falling off a little at the close. The variations were chiefly speculative, but holders maintained their prices, declining to concede the fraction of a cent asked for by bidders. There is a large stock on hand, but not more than will satisfy the anticipated demand. Plantation rubber still commands a higher price than the best grades of Brazilian.

Prices for plantation and South American rubber at the beginning and toward the end of the month are shown in the following quotations:

PLANTATIONS. January 2, first latex crêpe, spot 55¼ cents, futures 55½-55¾ cents; January 26, spot 52 cents, futures 53-53¼ cents.

January 2, ribbed smoked sheets 55 cents, futures 55-55½ cents; January 26, spot 52 cents, March-June 52¼ cents, July-December 53¼ cents.

January 2, No. 1, amber crêpe, spot 52½-53 cents, futures 53 cents; January 26, spot 52 cents, futures 52½ cents.

January 2, clear thin brown crêpe, spot 49 cents, futures 49-49½ cents; January 26, spot 48 cents, futures 48 cents.

January 2, No. 1 roll brown crêpe 42 cents to 42½ cents, futures 43 cents; January 26, spot 42 cents, futures 42 cents.

SOUTH AMERICAN PARÁS AND CAUCHO. January 2, spot prices, upriver fine 49½-50 cents, islands fine 48 cents, upriver coarse, 37 cents, islands coarse 24 cents, Cametá coarse 23½-24 cents, caucho ball 35-35½ cents. January 26, upriver fine 47 cents, islands fine 45½ cents, upriver coarse 34½ cents, islands coarse 21 cents, Cametá coarse 23½ cents, Caucho ball 34 cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on January 26, the current date:

	February 1, 1919.	January 1, 1920.	January 26, 1920.
PLANTATION HEVEA—			
First latex crêpe	$0.51½@	$0.55 @	$0.52¼@
Amber crêpe No. 1	.49 @	.53 @	.52 @
Amber crêpe No. 2	.48 @	.52 @	.51 @
Amber crêpe No. 3	.47 @	.51 @	.50 @
Amber crêpe No. 4	.46 @	.49 @	.48 @
Brown crêpe, thick and thin clean	.46 @	.49 @	.48 @
Brown crêpe, thin specky	.40 @	.45 @	.46 @
Brown crêpe, rolled	.33 @	.43½@	.42 @
Smoked sheet, ribbed, standard quality	.50 @	.55 @	.52 @
Smoked sheets, plain, standard quality	.49 @	.50 @	.51 @
Unsmoked sheet, standard quality	.48 @	.48 @	.48 @
Colombo scrap No. 1	.35 @	.38 @	.37 @
Colombo scrap No. 2	.33 @	.36 @	.35 @
EAST INDIAN—			
Assam crêpe	*.36 @	.49 @ .56	.46 @ .47
Assam onions	*.44 @	@	.46 @ .48
Penang block scrap	.37 @	.38½@	.38 @
PONTIANAK—			
Banjermassin	.13¾@	.13 @	.13 @
Palembang	.16 @	.14 @	@
Pressed block	.21 @	.24 @	.27 @
Sarawak	.12 @	.12 @	.11 @
SOUTH AMERICAN—			
PARAS—			
Upriver fine	.58½@	.50 @	.47 @
Upriver medium	.53 @	@	.39 @
Upriver coarse	.34½@	.37 @	.34 @
Upriver weak, fine	.45 @	.40 @	.37 @
Islands, fine	.49 @ .50	.47 @	.45 @
Islands, medium	@	.47 @ .48	.45 @
Islands, coarse	43 @ .44	.22 @	.22 @
Cametá, coarse	.22½@	.24 @ .25	.23 @
Madeira, fine	@	.51 @ .52	.47 @
Acre Bolivian, fine	*.55 @	.51 @ .52	.47 @
Peruvian fine	*.56 @	.51 @ .52	.47 @
Tapajos fine	*.55 @	.50 @	.46 @
CAUCHO—			
Lower caucho ball	.32 @	.29½@	.30 @
Upper caucho ball	.34 @	.34¼@	.34 @
SOUTH AMERICAN—			
MANICOBAS—			
Ceara negro heads	@	@	.35 @
Ceara scrap	@	@	.32 @
Manicoba (30% guarantee)	.40 @	@	.26 @
Mangabeira thin sheet	.38 @	@	.35 @
CENTRALS—			
Corinto scrap	.36 @	.34½@ .35	.33 @
Esmeralda sausage	.36 @	.34½@ .35	.33 @
Central scrap	.36 @	.34 @	.32 @
Central scrap and strip	.33 @	.32 @ .33	.30 @.31½
Central wet sheet	.24 @	.23 @	.23 @
Guayule (20% guarantee)	.33 @	.28 @	.27 @
Guayule, washed and dried	.46 @	.38 @	.37 @
AFRICANS—			
Niger flake, prime	.25 @	.18 @	.18 @
Benguela, extra No. 1, 28%	.32 @	@	.27 @
Benguela, No. 2, 32½%	.30 @	@	@
Congo prime, black upper	46 @	.37 @	.39 @
Congo prime, red upper	46 @	@	.37 @
Kassai black	@	.37 @	.40 @
Rio Nunez ball	*.55 @	@	@
Rio Nunez sheets and strings	*.55 @	.40 @	.40 @
Conakry niggers	*.55 @	.40 @	.40 @
Massai sheets and strings	*.55 @	.40 @	.40 @
GUTTA PERCHA—			
Gutta Siak	.24 @ .25	.27½@	.26 @
Red Macassar	2.90 @ 3.00	2.60 @	2.90 @
BALATA—			
Block, Ciudad, Bolivar	.72 @	.59 @	.56 @
Colombia	.60 @	.53 @	.50 @
Panama	.56 @	.45 @	.46 @
Surinam sheet	.88 @	.86 @	.82 @
amber	.90 @	.90 @	.84 @

*Nominal.

RECLAIMED RUBBER.

The market for reclaimed rubber during January exhibited the renewal of active demand on the part of users of this product to a gratifying extent. In all lines prices are firm at advances over quotations of a month ago, except in the case of white reclaim, which remains steady.

The demand may be described as active for near by deliveries. Future commitments are not markedly in evidence at the present time.

NEW YORK QUOTATIONS.

January 26, 1920.

Prices subject to change without notice.

Standard reclaims:	
Floating	$0.30 @$0.35
Friction	.35 @ .40
Mechanical	.12½@ .13½
Red	.23 @ .24
Shoe	.16 @ .16½
Tires, auto	.16 @ .17
truck	.13 @ .14
White	.22 @ .25

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

	January. 1920.*	1919. Allocated and Free.	1918.
First latex crêpe	$0.55¼@ .53	$0.58 @ .52	$0.59 @ .52½
Smoked sheet ribbed	.55 @ .53	.56 @ .51	.58 @ .50
Upriver fine	.50 @ .49½	.61 @ .58½	.63 @ .57
Upriver coarse	.37 @ .35½	.36 @ .34	.42 @ .37
Islands fine	.48 @ .46	.54 @ .49	.51 @ .47
Islands coarse	.24 @ .22½	.36 @ .22¾	.26½@ .24½
Cametá	.24 @ .23½	.25 @ .23	.26½@ .24½

*Figured only to January 27, 1920.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

"During January there has been a fair demand for paper, mostly from out-of-town banks, and early in the month rates were about 6 per cent for the best rubber names, but at the end of the month buyers wanted 6¼ per cent and 6½ per cent on almost everything. It looks as though rates will rule very firm for some time yet."

ANTWERP RUBBER MARKET.

GRISAR & CO., Antwerp, report [December 24, 1919]:

The market remained quiet during the past week and we close with nearly the same quotations. The stock in Antwerp was about 837 tons. Business in futures is steady with no noticeable change. Prices at closing were from 10.60 to 10.55 francs.

SINGAPORE WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [December 4, 1919]:

In sympathy with London and New York, there was a good demand for all grades at slightly higher values than last week at the auctions which opened Wednesday. Fine pale crêpe sold at up to 99½ cents or 3 cents better than last auction. Ribber smoked sheet realized up to $1 per pound (seven lots sold at $1.01 and six lots at $1.00½) or 2½ cents dearer than last week's price.

The lower grades were readily taken up at 2/4½ cents above last week's figures.

Out of 1,170 tons catalogd 1,077 tons were offered and 770 tons sold.

Tae following is the course of values:

	In Singapore, per Pound.[1]	Sterling equivalent per Pound in London.
Sheet, fine ribbed smoked	96c @ 100c	2/ 5¾ @ 2/ 6½
Sheet, good ribbed smoked	90 @ 95½	2/ 3¾ @ 2/ 5½
Crêpe, fine pale	95½ @ 99½	2/ 5¾ @ 2/ 6¾
Crêpe, good pale	88 @ 95	2/ 3¾ @ 2/ 5¾

[1]Quoted in S. S. currency—$1 equals $0.567.

BATAVIA RUBBER MARKET.

HERMANS, MARSMAN & CO., Batavia, report [October 16-November 15, 1919]:

The market opened weak, with small demand for prime smoked sheets at 1.34 guilders for spot and 1.36 for forward delivery. During the first week of November the market improved considerably and prices advanced as far as 1.41-1.46 guilders for prime smoked sheets and first pale crêpe. The market closed weaker, with quotations of 3 cents lower. Little attention was shown to off-qualities and lower grades. The quotations are:

	In Batavia Per ½-kilo.[1] Guilders.	Equivalent Per ½-kilo in U. S. Currency.
First pale crêpe	1.43	$0.572
Prime smoked sheets	1.43	0.572

[1]Quoted per ½-kilo (1.1 pounds) in Dutch Indian guilders ($0.40).

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official report from Singapore states that the export of plantation rubber from Straits Settlements ports in the month of November was 13,426 tons as against 8,338 tons in October and 2,661 tons in the corresponding month last year. The total export for eleven months of the current year amounted to 131,716 tons, compared with 57,537 tons in 1918 and 66,589 tons in 1917. Comparative statistics follow:

	1917.	1918.	1919.
January ..... *tons*	3,562	4,302	14,404
February	6,495	2,334	15,661
March	8,299	8,858	20,908
April	6,103	6,584	10,848
May	6,282	13,587	15,845
June	8,775	6,515	5,059
July	7,351	1,978	7,818
August	3,786	1,249	8,933
September	5,679	6,209	10,476
October	4,702	3,260	8,338
November	5,555	2,661	13,426
Totals	66,589	57,537	131,716

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AND CAUCHO AT NEW YORK.

	Pounds. Fine.	Medium.	Coarse.	Caucho.	Mixed Rubber.	Total Pounds.
DECEMBER 25. By the S. S. *Portfield*, from Pará.						
Meyer & Brown, Inc.	.....	.....	.....	16,512	.....	16,512
H. A. Asteett & Co	25,970	.....	13,100	1,750	.....	40,820
JANUARY 5. By the S. S. *Denis*, from Pará.						
General Rubber Co.	42,148	3,598	14,392	.....	.....	60,138
H. A. Astlett & Co.	25,970	.....	13,100	1,700	.....	40,820
Raw Products Co.	12,593	9,766	33,924	.....	.....	56,283
A. Latham & Co.	24.672	6,939	21,845	.....	.....	53,456
Gaston, Williams & Wigmore	32,382	771	34,838	.....	.....	67,991
Poel & Kelly	.....	.....	29,041	.....	.....	29,041
G. Amsinck & Co., Inc.	21,331	4,883	2,570	.....	.....	28,784
Cowdrey & Co.	5,140	771	257	.....	.....	6,168
Meyer & Brown, Inc.	55,125	.....	.....	.....	.....	55,125
F. R. Henderson & Co.	36,680	.....	62,240	.....	4,480	103,400
H. A. Astlett & Co.	42,720	.....	52,130	.....	.....	94,850
Various	.....	.....	10,000	16,000	.....	26,000
JANUARY 8. By the S. S. *Dade County*, from Pará and Manáos.						
Gaston, Williams & Wigmore	12,316	.....	11,220	2,640	.....	26,176
Paul Bertuch	220,460	.....	37,036	.....	.....	257,496
H. A. Astlett & Co.	126,200	.....	131,500	25,350	.....	283,050
Various	.....	.....	29,040	.....	.....	29,040
JANUARY 9. By the S. S. *Browning*, from Pará.						
G. Amsinck & Co., Inc.	.....	.....	.....	.....	.....	140,976
F. R. Henderson & Co.	7,620	.....	22,400	.....	.....	30,020
H. A. Astlett & Co.	.....	.....	44,500	.....	.....	44,500
William Schall & Co.	228,494	.....	27,684	80,559	.....	336,737
Poel & Kelly	.....	.....	.....	.....	.....	598,378
Neuss, Hesslein & Co.	.....	.....	.....	.....	.....	336,292
General Rubber Co.	.....	.....	.....	.....	.....	147,356
JANUARY 19. By the S. S. *Panama*, from Cristobal.						
William Schall & Co.	.....	.....	.....	.....	1,768	1,768
JANUARY 20. By the S. S. *Polycarp*, from Pará and Manáos.						
Paul Bertuch	79,721	749	73,637	45,194	.....	199,301
Meyer & Brown, Inc.	91,744	.....	24,544	2,476	.....	118,764
F. R. Henderson & Co.	4,480	.....	22,400	13,440	.....	40,320
H. A. Astlett & Co.	203,280	.....	246,260	27,100	.....	476,640
Hagemeyer & Brunn	318,060	.....	.....	.....	.....	318,060

PLANTATIONS.

Figured 180 pounds to the bale or case.

	Shipment from:	Shipped to:	Pounds.	Totals.
DECEMBER 19. By the S. S. *Carmania*, at New York.				
Poel & Kelly	Liverpool	New York	45,180	
General Rubber Co.	Liverpool	New York	26,280	
Rubber Trading Co.	Liverpool	New York	2,240	163,980
Various	Liverpool	New York	90,280	
DECEMBER 19. By the S. S. *Baltic*, at New York.				
Thornett & Fehr	Liverpool	New York	210,240	210,240
DECEMBER 19. By the S. S. *Rotterdam*, at New York.				
Pablo Hermanos	Rotterdam	New York	16,920	
Joosten & Janssen	Rotterdam	New York	407,340	
Hood Rubber Co.	Rotterdam	Watertown	15,230	
Meyer & Brown, Inc.	Rotterdam	New York	245,280	
Various	Rotterdam	New York	38,170	722,940
DECEMBER 20. By the S. S. *Clan MacGillivray*, at New York.				
Hood Rubber Co.	Colombo	Watertown	11,200	
Meyer & Brown, Inc.	Colombo	New York	473,760	
F. R. Henderson & Co.	Colombo	New York	274,000	
L. Littlejohn & Co., Inc.	Colombo	New York	190,400	
Fred Stern & Co.	Colombo	New York	44,000	993,360
DECEMBER 21. By the S. S. *Nitorian*, at Boston.				
Hood Rubber Co.	London	Watertown	339,063	339,063
DECEMBER 21. By the S. S. *Bolton Castle*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	1,120,000	
William H. Stiles & Co.	Singapore	New York	159,300	
Rubber Trading Co.	Singapore	New York	123,200	
Fred Stern & Co.	Singapore	New York	154,000	
F. W. Frost & Co.	Singapore	New York	11,160	
Rogers-Pyatt Shellac Co.	Singapore	New York	38,880	
T. A. Desmond & Co.	Singapore	New York	214,200	
Thornett & Fehr	Singapore	New York	67,500	
W. R. Grace & Co.	Singapore	New York	16,740	
Chas. T. Wilson & Co., Inc.	Singapore	New York	60,660	
J. T. Johnstone & Co.	Singapore	New York	325,500	
F. R. Henderson & Co.	Singapore	New York	1,260,017	
The Fisk Rubber Co.	Singapore	New York	112,680	
Poel & Kelly	Singapore	New York	244,800	
Rubber Importers & Dealers Co., Inc.	Singapore	New York	410,400	
Edward Maurer Co., Inc.	Singapore	New York	134,640	
Robinson & Co.	Singapore	New York	111,060	
Meyer & Brown, Inc.	Singapore	New York	56,000	
Pell & Dumont	Singapore	New York	100,800	
General Rubber Co.	Singapore	New York	355,140	
The Goodyear Tire & Rubber Co.	Singapore	Akron, Ohio	725,940	
Hood Rubber Co.	Penang	Watertown	114,374	
Aldens' Successors, Inc.	Singapore	New York	11,160	6,070,521
Various	P'rt Sw't'nh'm	New York	44,820	
Various	Singapore	New York	98,190	
DECEMBER 25. By S. S. *Orduna*, at New York.				
Poel & Kelly	Liverpool	New York	36,360	
The B. F. Goodrich Co.	Liverpool	Akron	163,800	
W. R. Grace & Co.	Liverpool	New York	58,320	
J. T. Johnstone & Co., Inc.	Liverpool	New York	34,740	293,220
DECEMBER 26. By the S. S. *Toyohoshi Maru*, at New York.				
G. Kawahara Co.	Kobe	New York	75,000	
Gaston Williams & Wigmore	Singapore	New York	103,500	
L. Littlejohn & Co., Inc.	Singapore	New York	47,880	
Mitsui & Co., Limited	Singapore	New York	35,100	
F. R. Henderson & Co.	Singapore	New York	220,760	
Facific Trading Co.	Singapore	New York	68,490	
Various	Singapore	New York	183,600	734,330
DECEMBER 26. By the S. S. *Port Chalmers*, at New York.				
Chas. T. Wilson Co., Inc.	London	New York	375,000	
Meyer & Brown, Inc.	London	New York	44,820	
Poel & Kelly	London	New York	696,620	
R. F. Downing & Co.	London	New York	52,020	
F. R. Henderson & Co.	London	New York	299,747	
Various	London	New York	3,910,833	5,379,040
DECEMBER 27. By the S. S. *Louis Luckenbach*, at New York.				
Joosten & Janssen	Rotterdam	New York	15,480	15,480
DECEMBER 28. By the S. S. *Adriatic*, at New York.				
Brandt's Sons	Southampton	New York	38,700	
Barney Bros. & Co.	Southampton	New York	494,280	
Various	Southampton	New York	187,380	720,360
DECEMBER 29. By the S. S. *Yetorofu Maru*, at New York.				
Chas. T. Wilson Co., Inc.	Singapore	New York	13,500	
Winter, Ross & Co.	Singapore	New York	76,320	
C. T. Trevanion & Co.	Singapore	New York	48,600	
Smith & Schippers	Singapore	New York	14,580	
Meyer & Brown, Inc.	Singapore	New York	404,085	
Various	Singapore	New York	233,655	790,740
DECEMBER 30. By the S. S. *Lancastrian*, at New York.				
Various	Antwerp	New York	247,240	247,240
DECEMBER 30. By the S. S. *Belgic*, at New York.				
General Rubber Co.	Liverpool	New York	53,820	
Various	Liverpool	New York	14,940	68,760
JANUARY 2. By the S. S. *Bassam*, at New York.				
Niger Co., Limited	Lagos	New York	107,663	107,663

PLANTATIONS.—Continued.

	Shipment from:	Shipped to:	Pounds.	Totals.
JANUARY 2. By the S. S. *Nieuw Amsterdam*, at New York.				
Poel & Kelly	Rotterdam	New York	61,020	
Various	Rotterdam	New York	324,830	385,850
JANUARY 2. By the S. S. *Radja*, at New York.				
General Rubber Co.	T'jon Priok	New York	254,340	
Schilthuis & Co.	Batavia	New York	61,200	
Estabrooks Co., Limited.	Batavia	New York	203,940	
L. Sutro & Co.	Soerabaya	New York	34,020	
Foreign Trade Corp.	Soerabaya	New York	6,480	
Various	Soerabaya	New York	360,540	
Various	Penang	New York	32,220	
Various	Batavia	New York	456,660	1,409,400
JANUARY 5. By the S. S. *Mesaba*, at New York.				
Chas. T. Wilson Co., Inc.	London	New York	90,585	
Rubber Trading Co.	London	New York	31,360	196,106
Various	London	New York	74,161	
JANUARY 5. By the S. S. *Bombay Maru*, at New York.				
F. R. Henderson & Co.	Colombo	New York	67,000	
Meyer & Brown, Inc.	Colombo	New York	22,400	
Various	Colombo	New York	1,070,250	1,159,650
JANUARY 5. By the S. S. *City of Bristol*, at New York.				
Meyer & Brown, Inc.	Colombo	New York	622,062	
Chas. T. Wilson Co., Inc.	Colombo	New York	124,600	
F. R. Henderson & Co.	Colombo	New York	152,000	
Various	Colombo	New York	789,108	1,687,770
JANUARY 6. By the S. S. *Port Albany*, at New York.				
Foreign Trade Bank, Cp.	London	New York	52,740	
Poel & Kelly	London	New York	360,000	
T. D. Downing & Co.	London	New York	63,360	
Meyer & Brown, Inc.	London	New York	11,052	
F. R. Henderson & Co.	London	New York	16,518	
Rubber Trading Co.	London	New York	52,640	
Various	London	New York	505,150	1,061,460
JANUARY 6. By the S. S. *Anglo Chilean*, at New York.				
Rubber Importers & Dealers Co., Inc.	Liverpool	New York	115	
Poel & Kelly	Liverpool	New York	2,875	
F. R. Henderson & Co.	Liverpool	New York	14,145	
Rubber Trading Co.	Liverpool	New York	25,745	42,880
JANUARY 8. By the S. S. *Madiocn*, at New York.				
Goldman, Sachs & Co.	Soerabaya	New York	69,120	
Joosten & Janssen	Soerabaya	New York	33,120	
L. Littlejohn & Co., Inc.	Soerabaya	New York	54,540	
L. Sutro & Co.	Soerabaya	New York	74,700	
Java-Holland American Trading Co.	Soerabaya	New York	9,000	
United Malaysian Rubber Co., Limited.	Soerabaya	New York	12,600	
Various	Soerabaya	New York	390,600	
Various	Belawan	New York	148,140	
Various	Asahan	New York	44,280	845,100
JANUARY 8. By the S. S. *Westerdyk*, at New York.				
Meyer & Brown, Inc.	Rotterdam	New York	72,148	
F. R. Henderson & Co.	Rotterdam	New York	66,166	138,314
JANUARY 11. By the *War President*, at St. John's.				
Meyer & Brown, Inc.	London	St. John's, N.F.	11,260	11,260
JANUARY 12. By the S. S. *Defiance*, at New York.				
T. D. Downing & Co.	London	New York	128,520	
Various	London	New York	134,820	263,340
JANUARY 12. By the S. S. *Treglisson*, at New York.				
The Goodyear Tire & Rubber Co.	Colombo	Akron	94,320	
C. C. Trevanion & Co.	Colombo	New York	441,000	
Fruhling & Goshen	Colombo	New York	62,100	
Meyer & Brown, Inc.	Colombo	New York	265,000	
Chas. T. Wilson Co., Inc.	Colombo	New York	125,600	988,020
JANUARY 15. By the S. S. *Clan Murdoch*, at New York.				
Various	Cochin	New York	356,580	356,580
JANUARY 17. By the S. S. *Yangtsze*, at New York.				
William H. Stiles	Singapore	New York	536,220	
Rubber Trading Co.	Belawan	New York	155,680	
W. G. Ryckman, Inc.	Singapore	New York	5,940	
Chas. T. Wilson Co., Inc.	Singapore	New York	179,750	
Pacific Trading Corp of America	Singapore	New York	45,540	
F. R. Henderson & Co.	Singapore	New York	510,250	
Aldens' Successors, Inc.	Singapore	New York	59,760	
The B. F. Goodrich Co.	Singapore	Akron	538,920	
The Goodyear Tire & Rubber Co.	Singapore	Akron	425,340	
J. T. Johnstone & Co., Inc.	Belawan	New York	13,500	
Boston Insulated Wire & Cable Co.	Singapore	Dorchester	5,400	
The Goodyear Tire & Rubber Co.	Deli	New York	77,760	
Edward Maurer & Co., Inc.	Singapore	New York	216,000	
Poel & Kelly	Singapore	New York	594,180	
L. Littlejohn & Co., Inc.	Singapore	New York	1,476,620	
Fred Stern & Co.	Singapore	New York	671,940	
The General Rubber Co.	Singapore	New York	711,540	
The General Rubber Co.	Belawan	New York	17,460	
Hadden & Co.	Singapore	New York	203,400	
Weise & Co.	Singapore	New York	40,500	
Rubber Importers and Dealers' Co., Inc.	Singapore	New York	421,480	
Thornett & Fehr	Singapore	New York	145,800	
Joosten & Janssen	Singapore	New York	38,700	
Irwin Harrison Crosfield	Belawan	New York	57,960	
Robinson & Co.	Singapore	New York	29,960	
M. F. Sargent & Co.	Singapore	New York	51,040	
Mexican Crude Rubber Co.	Swettenham	New York	58,500	
Meyer & Brown, Inc.	Singapore	New York	403,200	
Various	Belauan	New York	193,520	
Various	Soerabaya	New York	29,880	
Various	Teluk Anson	New York	5,680	
Various	P'rt Dickson	New York	51,120	
Various	Singapore	New York	1,531,080	9,483,620
JANUARY 17. By the S. S. *City of Colombo*, at New York.				
The Goodyear Tire & Rubber Co.	Colombo	Akron	137,880	
C. T. Wilson & Co., Inc.	Colombo	New York	318,020	
General Rubber Co.	Colombo	New York	403,200	
Hood Rubber Co.	Colombo	Watertown	11,220	
Rubber Trading Co.	Colombo	New York	22,400	
Various	Colombo	New York	543,420	1,436,140
JANUARY 19. By the S. S. *Winifredian*, at Boston.				
Hood Rubber Co.	London	Watertown	5,122	5,122
JANUARY 22. By the S. S. *Worcester*, at New York.				
Hood Rubber Co.	London	Watertown	130,500	130,500
JANUARY 22. By the S. S. *Cedric*, at New York.				
General Rubber Co.	Liverpool	New York	25,920	
Chas. T. Wilson Co., Inc.	Liverpool	New York	41,146	
Various	Liverpool	New York	107,460	174,526
JANUARY 23. By the S. S. *Noordam*, at New York.				
Poel & Kelly	Rotterdam	New York	155,520	
Meyer & Brown, Inc.	Rotterdam	New York	177,251	
Various	Rotterdam	New York	142,069	474,840
JANUARY 23. By the S. S. *Manhattan*, at New York.				
Rubber Trading Co.	London	New York	34,160	
T. D. Downing & Co.	London	New York	108,360	
Ajax Rubber Co., Inc.	London	New York	180	
Donner & Co.	London	New York	29,120	
Meyer & Brown, Inc.	London	New York	22,423	
Chas. T. Wilson Co., Inc.	London	New York	55,563	
Various	London	New York	932,704	1,182,510
JANUARY 23. By the S. S. *Glensanda*, at New York.				
F. R. Henderson & Co.	London	New York	112,000	
Chas. T. Wilson Co., Inc.	London	New York	241,939	
Rubber Trading Co.	London	New York	112,000	
Various	London	New York	723,416	1,189,355
JANUARY 23. By the S. S. *Comeric*, at New York.				
Meyer & Brown, Inc.	Colombo	New York	210,560	
F. R. Henderson & Co	Colombo	New York	341,202	
Hood Rubber Co.	Colombo	Watertown	11,210	562,972
JANUARY 23. By the S. S. *Eurylochus*, at New York.				
General Rubber Co.	Singapore	New York	156,000	
William H. Stiles & Co.	Singapore	New York	20,160	
Edward Boustead & Co.	Singapore	New York	48,600	
Meyer & Brown, Inc.	Singapore	New York	224,000	
Aldens' Successors, Inc.	Singapore	New York	173,700	
Pell & Dumont, Inc.	Singapore	New York	86,400	
Fred Stern & Co.	Singapore	New York	208,260	
East Asiatic Co.	Singapore	New York	129,420	
Rubber Trading Co.	Singapore	New York	22,400	
Balfour, Williamson & Co.	Singapore	New York	63,000	
L. Littlejohn & Co., Inc.	Singapore	New York	300,600	
Poel & Kelly	Singapore	New York	19,800	
F. R. Henderson & Co.	Singapore	New York	58,240	
The Goodyear Tire & Rubber Co.	Singapore	Akron	327,960	
Rubber Importers' & Dealers' Co., Inc.	Singapore	New York	131,400	
W. T. Sargent & Co.	Singapore	New York	42,480	
The B. F. Goodrich Co.	Singapore	Akron	478,620	
A. S. Fox & Co.	Singapore	New York	27,000	
W. T. Sargent & Co.	Singapore	New York	42,480	
William H. Stiles & Co.	Penang	New York	79,200	
Edward Boustead & Co.	Penang	New York	87,120	
J. T. Johnstone & Co., Inc.	Pt. Swet'nh'm	New York	150,000	
J. T. Johnstone & Co., Inc.	Deli	New York	146,520	
Vernon Metal & Produce Co.	Deli	New York	12,060	
Thornett & Fehr	Deli	New York	20,160	
Fred. Stern & Co.	Deli	New York	89,820	
Wm. Stokes & Co.	Deli	New York	41,920	
L. Littlejohn Co., Inc.	Deli	New York	1,800	
The Fisk Rubber Co.	Deli	Chicopee F.	60,480	
A. C. Fox & Co.	Pt. Swet'nh'm	New York	28,800	
Poel & Kelly	Penang	New York	114,480	
Pacific Trading Co.	Penang	New York	25,200	
Various	Singapore	New York	449,280	
Various	Deli	New York	43,200	
Various	Zamboanga	New York	21,600	3,932,160
JANUARY 23. By the S. S. *Konagawa Maru*, at New York.				
Chas. T. Wilson & Co., Inc.	Colombo	New York	96,000	
W. Reid Williams, Inc.	Colombo	New York	75,000	
Adolph Hirsch & Co., Inc.	Colombo	New York	44,800	
Poel & Kelly	Colombo	New York	128,100	
Meyer & Brown, Inc.	Colombo	New York	405,400	749,300

BALATA.

	Shipment from:	Shipped to:	Pounds.	Totals.
DECEMBER 18. By the S. S. *Mayaro*, at New York.				
Edward Maurer Co., Inc.	Cristobal	New York	23,400	
R. J. Dick, Ltd.	Cristobal	Passaic	214,650	
Southern Sales Corp.	Cristobal	New York	86,850	
South & Central America Commercial Co	Cristobal	New York	46,650	
American Trading Co.	Cristobal	New York	16,500	
General Export & Commercial Co.	Cristobal	New York	14,100	402,150
DECEMBER 19. By the S. S. *Atenas*, at New York.				
H. Marne & Co.	Cartagena	New York	1,350	1,350
DECEMBER 19. By the S. S. *Panama*, at New York.				
Wellman, Peck & Co.	Cristobal	New York	4,050	
Heilbron, Wolff & Co.	Cristobal	New York	1,050	
Ultramares Corp.	Cristobal	New York	1,140	6,240
DECEMBER 20. By the S. S. *Mohican*, at New York				
Ultramares Corp.	Port Columbia	New York	5,700	5,700
DECEMBER 21. By the S. S. *Fort Gaines*, at New York.				
American Trading Co.	Cristobal	New York	3,750	3,750
DECEMBER 24. By the S. S. *General G. W. Goethals*, at New York.				
Ultramares Corp.	Cristobal	New York	4,250	4,250
DECEMBER 25. By the S. S. *Orduna*, at New York.				
Earle Bros.	Liverpool	New York	16,000	16,000
DECEMBER 25. By the S. S. *Ancon*, at New York.				
Fidanque Bros. & Sons.	Cristobal	New York	1,850	
Hollingshurst & Co.	Cristobal	New York	1,350	3,200
DECEMBER 26. By the S. S. *Commewijne*, at New York.				
Arkell & Douglas.	Paramaribo	New York	3,360	3,360
DECEMBER 26. By the S. S. *Francis*, at New York.				
R. del Castello & Co.	Cartagena	New York	5,250	5,250
DECEMBER 27. By the S. S. *Maraval*, at New York.				
South & Central American Commercial Co.	British W. I. Ciudad Bolivar		11,400	11,400
DECEMBER 28. By the S. S. *Adriatic*, at New York.				
Various	Southampton	New York	1,950	1,950
DECEMBER 30. By the S. S. *Thelma*, at New York.				
G. Amsinck & Co., Inc.	Cartegena	New York	6,300	6,300
JANUARY 2. By the S. S. *Colon*, at New York.				
Mecke & Co.	Cristobal	New York	3,000	
Ultramares Corp.	Cristobal	New York	6,900	
H. Wolff & Co.	Cristobal	New York	900	10,800
JANUARY 19. By the S. S. *Cristobal*, at New York.				
Isaac Brandon & Bros.	Cristobal	New York	2,550	
P. Nephews Co.	Cristobal	New York	900	3,450
JANUARY 19. By the S. S. *Gen. W. C. Gorgas*, at New York.				
H. Marquardt & Co.	Cristobal	New York	13,500	
Chas. E. Griffin	Cristobal	New York	1,350	14,850
JANUARY 23. By the S. S. *Parima*, at New York.				
Middleton & Co.	Georgetown	New York	87,000	87,000

CENTRALS.

DECEMBER 19. By the S. S. *Panama*, at New York.				
W. R. Grace & Co.	Cristobal	New York	4,050	
A. M. Capen's Sons.	Cristobal	New York	3,750	
Dormales & Co.	Cristobal	New York	1,170	
Mecke & Co.	Cristobal	New York	6,750	
Willman, Peck & Co.	Cristobal	New York	1,350	
Ultramares Corp.	Cristobal	New York	300	17,370
DECEMBER 24. By the S. S. *G. W. Goethals*, at New York.				
Holtrans Co., Inc.	Cristobal	New York	15,000	
Pablo Calvet & Co.	Cristobal	New York	6,000	21,000
DECEMBER 25. By the S. S. *Ancon*, at New York.				
L. Turnure & Co.	Cristobal	New York	3,900	
American Trading Co.	Cristobal	New York	6,000	
G. Amsinck & Co., Inc.	Cristobal	New York	10,800	
Neuss, Hesslein & Co.	Cristobal	New York	5,100	
Parmelee & Co.	Cristobal	New York	5,850	
Sembrada & Co.	Cristobal	New York	33,300	
A. M. Capen's Sons.	Cristobal	New York	3,900	
Isaac Brandon & Bros.	Cristobal	New York	1,050	
Pablo Calvet & Co.	Cristobal	New York	30,000	
Mecke & Co.	Cristobal	New York	3,750	
Andean Trading Co.	Cristobal	New York	12,450	
Various	Cristobal	New York	33,450	149,550
DECEMBER 26. By the S. S. *Carrillo*, at New York.				
Ultramares Corp.	Cartagena	New York	6,300	6,300
DECEMBER 27. By the S. S. *Maraval*, at New York.				
Middleton & Co.	Trinidad	New York	13,706	13,706
DECEMBER 29. By the S. S. *Tivives*, at New York.				
Isaac Brandon & Bros.	Costa Rica	New York	600	
Mecke & Co.	Cristobal	New York	6,300	
J. S. Sembrada & Co.	Cristobal	New York	1,500	
William E. Peck & Co.	Cristobal	New York	3,900	
Ultramares Corp.	Cristobal	New York	5,250	
G. Amsinck & Co., Inc.	Cristobal	New York	38,100	55,650
JANUARY 2. By the S. S. *Colon*, from Cristobol, at New York.				
J. S. Sembrada & Co., Inc.	Cristobal	New York	736	736
JANUARY 13 By the S. S. *Vindal*, at New York.				
Ultramares Corp.	Colombia	New York	300	
Andean Trading Co.	Colombia	New York	4,200	4,500
JANUARY 16. By the S. S. *Atenas*, at New York.				
Andean Trading Co.	P'to Colombia	New York	1,800	1,800
JANUARY 19. By the S. S. *Panama*, at New York.				
Colombia Overseas Co.	Cristobal	New York	31,800	
W. R. Grace & Co.	Cristobal	New York	3,600	
Andean Trading Co.	Cristobal	New York	2,850	
G. Amsinck & Co., Inc.	Cristobal	New York	16,950	
Ultramares Corp.	Cristobal	New York	3,750	
Lawrence Turnure & Co.	Cristobal	New York	1,500	
J. S. Sembrada & Co.	Cristobal	New York	9,300	
O. Gordon Co.	Cristobal	New York	17,250	
Gravenhorst & Co.	Cristobal	New York	3,450	
Various	Cristobal	New York	9,000	99,450
JANUARY 19. By the S. S. *W. C Gorgas*, at New York.				
G. Amsinck & Co., Inc.	Cristobal	New York	9,300	
Central & South American Trading Co.	Cristobal	New York	900	
Various	Cristobal	New York	150	10,350
JANUARY 23. By the S. S. *Lake Weir*, at New York.				
Various	Puerto Barrios	New York	1,650	1,650

AFRICANS.

	Shipment from:	Shipped to:	Pounds.	Totals.
DECEMBER 19. By the S. S. *Carmania*, at New York.				
Poel & Kelly.				
Rubber Trading Co.				
Alden's Successors, Inc.	Liverpool	New York	22,020	
DECEMBER 20. By the S. S. *Canada*, at New York.				
Various	Liverpool	New York	13,440	
DECEMBER 26. By the S. S. *Londonier*, at New York.				
H. Phillips	Liverpool	New York	58,182	93,642
Rubber Trading Co.	Marseilles	New York	683,500	683,500
DECEMBER 30. By the S. S. *Pesaro*, at New York.				
R. T. Downing & Co.	Antwerp	New York	12,320	
DECEMBER 30. By the S. S. *Lancastrian*, at New York.				
Meyer & Brown, Inc.	Antwerp	New York	40,320	52,640
Rubber Trading Co.	Genoa	New York	1,150	1,150
JANUARY 6. By the S. S. *Anglo Chilian*, at New York.				
The Goodyear Tire & Rubber Co.	Liverpool	Akron	16,020	
Rubber Importers' & Dealers Co., Inc.	Liverpool	New York	12,420	
Thornett & Fehr.	Liverpool	New York	11,340	39,780
JANUARY 12. By the S. S. *Dallas*, at New York.				
Various	Marseilles	New York	329,992	329,992
JANUARY 17. By the S. S. *Yangtze*, at New York.				
Edward Boustead & Co.	Singapore	New York	15,840	15,840
JANUARY 22. By the S. S. *Pipeston County*, at New York.				
Various	Brest	New York	85,675	85,675

PONTIANAK.

DECEMBER 21. By the S. S. *Bolton Castle*, at New York.				
Hadden & Co.	Singapore	New York	57,300	
L. Littlejohn & Co., Inc.	Singapore	New York	13,800	
United Malaysian Co.	Singapore	New York	369,600	440,700
DECEMBER 26. By the S. S. *Toyahoshi Maru*, at New York.				
Mitsubishi Goshi Kaisha.	Singapore	New York	36,000	
Various	Singapore	New York	40,500	76,500
JANUARY 17. By the S. S. *Yangtsze*, at New York.				
United Malaysian Rubber Co.	Singapore	New York	442,800	
Fred Stern & Co.	Singapore	New York	6,000	
Thos. A. Desmond & Co.	Singapore	New York	11,400	
J. T. Johnstone & Co., Inc.	Singapore	New York	11,400	
Dunbar & Co.	Singapore	New York	22,800	
Various	Singapore	New York	45,600	540,000
JANUARY 26. By the S. S. *Eurylochus*, at New York.				
New York 40,200	Singapore	L. Littlejohn & Co., Inc.		
New York 90,600	Singapore	United Malaysian Co.		
New York 8,700 139,500	Singapore	Various		

GUTTAPERCHA.

JANUARY 2. By the S. S. *Bassam*, at New York.				
Niger Co.	Lagos	New York	13,200	13,200
JANUARY 26. By the S. S. *Eurylochus*, at New York.				
Various	P't Sw't'nh'm	New York	1,500	1,500

GUTTAS.

DECEMBER 21. By the S. S. *Bolton Castle*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	128,100	
United Malaysian Co.	Singapore	New York	96,000	224,100

MANICOBA (Ceara).

DECEMBER 19. By the S. S. *Lancaster Castle*, at New York.				
Faria, Bosta & Co.	Buenos Aires	New York	1,760	1,760
DECEMBER 26. By the S. S. *Francis*, at New York.				
Various	Ceara	New York	627,000	627,000
DECEMBER 29. By the S. S. *Tapajoz*, at New York.				
J. H. Rossbach Bros.	Rio de Janeiro	New York	14,960	14,960
JANUARY 25. By the S. S. *Justin*, at New York.				
F. R. Henderson & Co.	Ceara	New York	23,383	23,383

CRUDE RUBBER ARRIVALS AT PACIFIC PORTS AS REPORTED.

PLANTATIONS.

DECEMBER 27. By the S. S. *West Hartland*.					
F. R. Henderson & Co., Inc.	Singapore	Portland	New York	56,000	
Chas. T. Wilson & Co., Inc.	Singapore	Portland	New York	190,750	
Rubber Trading Co.	Singapore	Portland	New York	33,600	280,350
DECEMBER 29. By the S. S. *Korea Maru*.					
F. R. Henderson & Co., Inc.	Singapore	San Fran.	New York	1,551,896	
Rubber Trading Co.	Singapore	San Fran.	New York	22,400	1,574,296
DECEMBER 30. By the S. S. *Venezuela*.					
F. R. Henderson & Co., Inc.	Singapore	San Fran.	New York	162,254	162,254
JANUARY 1. By the S. S. *Tyndareus*.					
F. R. Henderson & Co., Inc.	Singapore	Seattle	New York	641,077	180,000
Chas. T. Wilson & Co., Inc.	Singapore	Seattle	New York		697,007
Rubber Trading Co.	Singapore	Seattle	New York	56,000	
JANUARY 15. By the S. S. *Empress of Russia*.					
U. S. Rubber Co.	Honkong	Vancouver	New York	342,000	342,000

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES DURING THE MONTH OF NOVEMBER, 1919.

EXPORTED TO—	Belting Hose and Packing.	Boots.		Shoes.		Druggists' Rubber Sundries.	Tires.		Insulated Wire and Cables.	All Other Manufactures of Rubber.	Totals.
EUROPE:	Value.	Pairs.	Value.	Pairs.	Value.	Value.	Automobile. Value.	All Others. Value.	Value.	Value.	Value.
Austria-Hungary	.....	.....	.....	.....	.....	.....	$3,392	.....	.....	.....	$3,392
Belgium	.....	.....	.....	3,216	$2,014	$150	122,493	$350	$37,194	$3,347	165,548
Denmark	$3,152	168	$560	170,663	106,608	2,015	137,010	900	5,923	11,570	267,738
Finland	2,714	.....	.....	70,372	59,380	.....	23,367	.....	9,435	2,205	97,101
France	2,563	84	127	24,006	11,165	9,666	250,491	3,260	.....	25,711	302,983
Germany	2,264	.....	.....	.....	.....	.....	561	.....	.....	257	3,082
Greece	203	.....	.....	2,000	2,000	1,002	2,670	.....	1,200	3,000	10,075
Italy	1,211	312	821	16,680	12,665	92	19,828	18	228	14,316	49,179
Malta, Gozo, & Cyprus Islands	.....	.....	.....	.....	.....	.....	424	.....	.....	.....	424
Netherlands	3,101	.....	.....	381	245	5,145	305,605	41,687	41,608	21,774	419,165
Norway	1,881	.....	.....	126,767	91,962	50	44,871	2,019	17,698	5,928	164,409
Portugal	.....	.....	.....	2,702	2,345	.....	69,228	711	1,835	457	74,576
Roumania	3,952	.....	.....	16,229	21,679	850	27,196	.....	213	1,172	55,062
Russia in Europe	.....	.....	.....	6,000	4,001	.....	.....	.....	.....	800	4,801
Spain	13	.....	.....	13	19	1,250	21,948	.....	4,509	315	28,054
Sweden	3,993	264	2,000	211,786	138,979	6,121	115,175	14,660	3,271	7,609	291,808
Switzerland	.....	672	988	4,966	4,821	.....	41,880	.....	443	530	48,662
Turkey in Europe	.....	.....	.....	189,449	157,721	.....	19,883	.....	.....	.....	177,604
England	83,535	2,057	4,361	74,075	42,361	9,684	119,081	.....	63,227	215,248	537,497
Scotland	.....	.....	.....	.....	.....	.....	48	.....	.....	290	338
TOTALS, EUROPE	$104,582	3,557	$8,857	919,305	$657,965	$36,025	$1,325,151	$63,605	$186,784	$314,529	$2,701,498
NORTH AMERICA:											
Bermuda	$29	.....	.....	372	$314	$342	.....	$36	.....	$317	$1,038
British Honduras	88	.....	.....	520	478	31	669	5	.....	351	1,622
Canada	49,394	9,169	$30,085	5,480	9,966	29,883	33,789	4,504	$13,031	260,783	431,435
Costa Rica	656	.....	.....	.....	.....	30	962	311	199	468	2,626
Guatemala	2,870	.....	.....	376	288	467	3,387	294	183	741	8,230
Honduras	1,654	.....	.....	120	213	.....	2,064	429	171	631	5,162
Nicaragua	1,824	.....	.....	50	50	1,090	4,626	.....	1,880	1,039	10,509
Panama	9,281	.....	.....	.....	.....	567	11,676	1,894	4,173	1,628	29,219
Salvador	282	.....	.....	.....	.....	105	1,184	382	.....	1,316	3,269
Mexico	55,096	96	433	3,747	3,115	5,846	78,365	5,904	30,608	22,804	202,171
Miquelon, Langley, etc.	.....	144	432	120	100	.....	.....	.....	.....	.....	532
Newfoundland and Labrador	938	6,249	17,762	3,782	3,330	76	1,309	.....	19,879	2,671	45,965
Barbados	89	.....	.....	408	342	.....	1,281	.....	45	47	1,804
Jamaica	1,138	.....	.....	684	838	217	9,042	8	1,223	2,017	14,483
Trinidad and Tobago	1,740	.....	.....	24	19	41	8,245	1,608	97	238	11,988
Other British West Indies	79	.....	.....	1,327	1,333	53	4,059	105	23	561	6,213
Cuba	64,490	.....	.....	3,721	3,283	6,438	122,346	8,573	98,158	37,656	340,944
Danish West Indies	12	.....	.....	180	158	.....	173	5	.....	69	417
Dutch West Indies	.....	.....	.....	.....	.....	13	1,659	.....	.....	91	1,763
French West Indies	1,501	.....	.....	.....	.....	.....	6,223	884	35	109	8,752
Haiti	115	.....	.....	.....	.....	9	6,134	304	91	400	7,053
Dominican Republic	1,811	.....	.....	84	59	3,217	12,899	148	638	1,633	20,405
TOTALS, NORTH AMERICA	$193,087	15,658	$48,712	20,995	$23,886	$48,425	$310,092	$25,394	$170,434	$335,570	$1,155,600
SOUTH AMERICA:											
Argentina	$12,455	.....	.....	.....	.....	$1,076	$132,114	.....	$25,804	$11,974	$183,423
Bolivia	3,155	.....	.....	.....	.....	.....	1,916	.....	181	167	5,419
Brazil	33,029	.....	.....	1,475	$1,642	2,414	60,575	$523	40,764	23,728	162,675
Chile	30,046	.....	.....	8	9	2,481	14,221	252	17,349	4,802	69,160
Colombia	690	.....	.....	1,710	1,462	819	3,338	33	6,750	1,474	14,566
Ecuador	81	.....	.....	20	16	128	3,480	.....	2,003	556	6,264
British Guiana	16	.....	.....	2,080	2,037	1	4,647	51	193	39	6,984
Dutch Guiana	44	.....	.....	.....	.....	.....	332	.....	.....	225	601
French Guiana	.....	.....	.....	53	70	.....	70	.....	.....	.....	140
Paraguay	366	.....	.....	.....	.....	.....	.....	.....	.....	.....	366
Peru	1,661	.....	.....	288	465	447	19,075	.....	5,342	1,903	28,893
Uruguay	180	.....	.....	.....	.....	679	51,464	.....	4,935	2,289	59,547
Venezuela	824	72	$259	154	109	405	16,714	80	369	1,410	20,170
TOTALS, SOUTH AMERICA	$82,547	72	$259	$5,788	$5,810	$8,450	$307,946	$939	$103,690	$48,567	$558,208
ASIA:											
China	$18,867	.....	.....	11	$19	$1,882	$11,776	$198	$43,111	$3,001	$78,854
Japanese China	103	.....	.....	.....	.....	74	.....	.....	.....	.....	177
Chosen	5	.....	.....	.....	.....	.....	3,049	.....	172	512	3,738
British India	4,764	.....	.....	.....	.....	240	52,280	.....	216	4,155	61,655
Straits Settlements	.....	.....	.....	436	477	1,280	92,444	.....	122	2,711	97,034
Dutch East Indies	3,418	1	$3	1	2	425	43,495	800	11,311	3,786	63,240
French East Indies	2,188	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,188
Hongkong	551	.....	.....	.....	.....	894	599	.....	.....	489	2,533
Japan	47,241	2,031	4,494	64,130	71,098	358	15,547	.....	902	7,544	147,184
Persia	.....	.....	.....	.....	.....	.....	400	.....	.....	.....	400
Russia in Asia	1,770	.....	.....	399	873	5,721	1,551	.....	.....	5,815	15,730
Siam	38	.....	.....	1	2	71	.....	.....	.....	122	233
Turkey in Asia	.....	223	669	3,375	1,744	81	2,826	.....	.....	547	5,867
TOTALS, ASIA	$78,945	2,255	$5,166	68,353	$74,215	$11,026	$223,967	$998	$55,834	$28,682	$478,833
OCEANIA:											
Australia	$17,598	.....	.....	702	$806	$1,805	$98,904	$7,030	$3,006	$11,269	$140,418
New Zealand	10,695	.....	.....	1,154	1,881	129	62,134	638	1,015	9,089	85,581
Other British Oceania	1,200	.....	.....	122	225	.....	1,402	.....	.....	1	2,828
French Oceania	99	.....	.....	152	218	.....	.....	215	28	227	787
German Oceania	.....	1	$6	.....	.....	.....	412	.....	.....	.....	418
Philippine Islands	14,800	.....	.....	4,942	4,846	1,333	57,832	3,102	7,250	18,617	107,780
TOTALS, OCEANIA	$44,392	1	$6	7,072	$7,976	$3,267	$220,684	$10,985	$11,299	$39,203	$337,812
AFRICA:											
British West Africa	.....	.....	.....	52	$125	$262	$27,461	.....	.....	$154	$28,002
British South Africa	$8,140	48	$205	5,805	4,006	701	18,220	$2,705	$7,050	4,540	45,567
British East Africa	.....	.....	.....	.....	.....	.....	247	.....	.....	.....	247
Canary Islands	.....	.....	.....	.....	.....	.....	176	7	.....	.....	183
French Africa	1,500	.....	.....	.....	.....	.....	4,380	.....	.....	.....	5,880
Portuguese Africa	847	.....	.....	.....	.....	13	.....	59	.....	1,806	2,725
Eg.	675	.....	.....	1,003	860	.....	634	.....	655	1	2,825
TOTALS, AFRICA	$11,162	48	$205	6,860	$4,991	$976	$51,118	$2,771	$7,705	$6,501	$85,429
TOTALS	$518,715	21,591	$63,205	1,028,373	$774,843	$108,169	$2,438,958	$104,692	$535,746	$773,052	$5,317,380

SHIPMENTS TO NON-CONTIGUOUS TERRITORY.

EXPORTED TO—	Belting Hose and Packing.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Druggists' Rubber Sundries. Value.	Tires. Automobile. Value.	Tires. All Others. Value.	Insulated Wire and Cables. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
Hawaii	$20,167	.....	.....	.....	$138,314	$5,423	.....	$15,895	$179,799
Porto Rico	5,408	.....	.....	.....	47,752	2,413	.....	17,044	70,617
TOTALS	$25,575	.....	.....	.....	$184,066	$7,836	.....	$32,939	$250,416

(Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.)

UNITED STATES CRUDE RUBBER IMPORTS FOR 1919 (BY MONTHS).

1919.	Plantations.	Paras.	Africans.	Centrals.	Guayule.	Manicoba and Matto Grosso.	Totals for 1919.	Totals for 1918.
January ....*tons*	4,906	2,141	2	114	72	...	7,235	16,084
February	14,079	2,701	489	100	87	...	17,456	13,108
March	23,680	3,808	337	211	187	...	28,223	17,161
April	24,678	2,794	90	144	330	110	28,146	13,425
May	14,856	772	389	97	234	...	16,348	16,288
June	13,645	1,706	264	263	390	51	16,319	24,124
July	17,645	121	16	82	101	...	17,965	16,092
August	8,221	2,594	137	74	41	...	11,067	10,421
September	10,143	3,423	312	51	11	96	14,036	5,353
October	25,483	2,590	508	108	25	174	28,888	9,509
November	13,049	2,230	351	44	...	...	15,674	3,363
December	21,885	2,178	445	135	23	9	24,675	11,292
Totals ...	192,270	27,058	3,340	1,423	1,551	442	226,032	156,220

(Compiled by The Rubber Association of America, Inc.)

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	Seven Months Ended July 31. 1918. Quintals.[1]	1918. Lire[2].	1919. Quintals.	1919. Lire.
India rubber and gutta percha—raw and reclaimed:				
From Great Britain	4,279	.....	.....	.....
India and Ceylon	5,217	.....	18,101	.....
Straits Settlements	17,949	.....	32,802	.....
French African Colonies	4,214	.....	2,620	.....
Belgian Congo	132	.....	574	.....
Brazil	8,895	.....	22,425	.....
Other countries	1,273	.....	1,013	.....
Totals	41,959	44,056,950	77,535	81,411,750
Rubber scrap	889	160,020	13,576	2,443,680
MANUFACTURED—				
India rubber and gutta percha—				
Threads	380	998,000	156	405,600
Sheets, including hard rubber	62	100,100	98	161,600
Tubes:				
Inner tubes	4	10,400	2	5,200
Hose	70	91,000	107	139,100
Other forms	1	1,200	19	22,800
Belting	358	501,200	284	397,600
Rubber-coated fabrics—*pieces:*				
For carding combs	117	187,200	290	464,000
Other forms	3	4,500	59	88,500
Boots and shoes—*pairs*	23,368	350,520	13,068	196,020
Elastic webbing	111	310,800	247	691,600
Clothing and articles for travel	1	48,000	2	6,400
Manufactures of rubber and gutta percha, n. e. s.:				
Tires and tubes:				
From France	1,448	4,538,400	3,114	8,659,200
Great Britain	443		491	
Other countries	.....		3	
Other rubber manufactures:				
From France	1,294	3,661,500	99	11,911,500
Great Britain	1,019		7,818	
United States	126		23	
Other countries	2		1	
Totals, manufactured.	.....	12,324,820	.....	26,979,720
Totals, imported.	.....	56,531,790	.....	110,835,150

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	Seven Months Ended July 31. 1918. Quintals.[1]	1918. Lire[2].	1919. Quintals.	1919. Lire.
India rubber and gutta percha—raw and reclaimed:				
To Spain	801	.....	1,985	.....
United States	115	.....	1,371	.....
Totals	916	366,400	3,356	1,342,400
Rubber scrap	.....	.....	152,640	152,640
MANUFACTURED—				
India rubber and gutta percha—Threads	18	48,600	263	710,100
Sheets:				
Cut sheets	7	16,800	28	67,200
Elastic fabric	21	25,200	12	14,400
Other kinds, including hard rubber	20	30,000	19	28,500
MANUFACTURED—				
Tubes:				
Inner tubes	3	7,800	43	111,800
Hose	86	103,200	286	343,200
Other forms	65	71,500	207	227,700
Belting	36	57,600	95	152,000
Rubber-coated fabrics.—*pieces*	38	45,600	148	177,600
Elastic webbing	544	1,632,000	414	1,242,000
Clothing and articles for travel	3	14,400	9	43,200
Manufactures of india rubber and gutta percha, n. e. s.:				
From cut sheets	45	117,000	64	166,400
Elastic fabrics	66	105,600	109	174,400
Tires and tubes:				
To France	2,249		283	
Great Britain	1,108		1,644	
Spain	81		278	
Switzerland	.....		15	
British India and Ceylon	.....		545	
Dutch East Indies	441	8,665,900	.....	12,179,000
Straits Settlements	.....		140	
Australia	.....		242	
Argentina	4		636	
Brazil	434		462	
Other countries	244		2,165	
Other rubber manufactures:				
To France	91		199	
Great Britain	87		89	
Spain	7		8	
Switzerland	109		76	
Egypt	21	618,800	29	1,283,800
Argentina	31		132	
Brazil	17		25	
Uruguay	8		11	
Other countries	71		357	
Totals manufactured.	.....	11,560,000	.....	16,921,300
Total exports	.....	11,926,400	.....	18,416,340

[1] One quintal equals 220.46 pounds.
[2] One lire equals $0.193.

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

UNMANUFACTURED—	November. 1918. Pounds.	1918. Value.	1919. Pounds.	1919. Value.
Crude rubber:				
From—				
Dutch East Indies	356,600	£41,433	2,269,300	£231,909
French West Africa	13,600	1,621	20,000	2,200
Gold Coast	81,400	4,805	52,800	6,036
Other African countries	244,900	18,512	60,300	5,225
Peru	.....	.....	180,900	19,240
Brazil	770,500	107,240	724,000	82,517
British India	250,700	31,527	327,700	38,049
Straits Settlements and dependencies, including Labuan	3,434,000	402,775	4,270,100	514,335
Federated Malay States	1,681,400	201,328	3,353,900	355,463
Ceylon and dependencies	1,015,500	116,872	2,923,600	314,032
Other countries	856,500	101,589	214,200	24,543
Totals	8,705,100	1,027,702	4,396,800	1,593,540
Waste and reclaimed rubber	8,720,000	1,028,225	15,024,200	1,612,738
Gutta percha	1,244,100	236,534	1,068,700	194,484
MANUFACTURED—				
Boots and shoes..*dozen pairs*	2,612	24,327	19,074	40,001
Waterproof clothing	.....	6,561	.....	3,955
Automobile tires and tubes	.....	85,528	.....	206,180
Bicycle tires and tubes	.....	.....	.....	11,822
Motorcycle tires and tubes	.....	99	.....	3,789
Insulated wire	.....	25	.....	2,598
Totals, manufactured	.....	116,540	.....	268,345

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber	400,500	£15,228	959,300	£26,535
MANUFACTURED—				
Boots and shoes..*dozen pairs*	5,801	7,799	11,194	27,498
Waterproofed clothing	.....	43,977	.....	296,195
Automobile tires and tubes	.....	83,906	.....	245,471
Motorcycle tires and tubes	.....	7,270	.....	23,410
Bicycle tires and tubes	.....	16,357	.....	125,205
Carriage tires and tubes	.....	13,561	.....	22,598
Insulated wire	.....	8,315	.....	95,201
Submarine cables	.....	24,938	.....	50,399
Other rubber manufactures	.....	126,951	.....	298,334
Totals	.....	£348,302	.....	£1,210,846

UNITED KINGDOM RUBBER STATISTICS—(Continued)
EXPORTS—COLONIAL AND FOREIGN.

	November. 1918. Pounds.	1918. Value.	1919. Pounds.	1919. Value.
UNMANUFACTURED—				
Crude rubber:				
To Belgium	.....	.....	584,900	£61,856
France	1,492,900	£167,740	1,755,900	183,108
Italy	318,000	34,379	191,900	16,063
Russia	.....	.....	5,600	420
United States	.....	.....	10,127,500	1,088,897
Other countries	208,300	25,858	2,629,900	284,706
Totals	2,019,200	£227,977	15,295,700	£1,635,050
Waste and reclaimed rubber	22,400	900	220,800	7,856
Totals, unmanufactured	2,041,600	£228,877	15,516,500	£1,642,906
Gutta percha	29,100	5,921	164,900	33,610
MANUFACTURED—				
Boots and shoes..*dozen pairs*	.....	.....	254	£533
Waterproofed clothing	.....	.....	.....	305
Carriage tires	.....	.....	.....	17
Automobile tires and tubes	.....	73	.....	5,435
Motorcycle tires and tubes	.....	.....	.....	147
Bicycle tires and tubes	.....	81	.....	417
Insulated wire	.....	500	.....	.....
Totals	.....	£654	.....	£6,854

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	October. 1918. Pounds.	1918. Value.	1919. Pounds.	1919. Value.
UNMANUFACTURED—*free:*				
Rubber, gutta percha, etc.:				
From United Kingdom	118,400	$24,520	216,478	$98,600
United States	196,269	92,366	536,077	238,737
Brazil	40,000	14,000	.....	.....
British East Indies:				
Straits Settlements	1,408,723	427,316	986,643	494,315
Dutch East Indies	.....	.....	114	57
New Zealand	12,779	9,188	.....	.....
Other countries	1,150	672	.....	.....
Totals	1,777,321	$568,062	1,739,312	$831,709
Rubber recovered	301,204	52,140	333,677	51,989
Hard rubber, sheets and rods	2,074	1,479	2,379	1,980
Hard rubber tubes	.....	1,067	.....	3,598
Rubber, powdered, and rubber or gutta percha scrap	164,654	27,221	300,819	28,897
Rubber thread, not covered	7,223	9,225	7,379	10,644
Rubber substitute	76,303	9,222	209,402	23,728
Totals, unmanufactured	2,328,779	$668,416	2,592,968	$952,545
Chicle	38,108	22,989	245,425	180,935
MANUFACTURED—*dutiable:*				
Boots and shoes	.....	$9,966	.....	$29,499
Waterproofed clothing	.....	6,739	.....	13,700
Belting, hose and packing	.....	33,404	.....	36,459
Gloves and hot-water bottles	.....	(*)	.....	4,228
Fountain pens	.....	(†)	.....	2,314
Tires	.....	54,082	.....	84,736
Insulated wire and cables:				
Wire and cables, covered with cotton, linen, silk, rubber, etc.	.....	10,221	.....	14,331
Copperwire and cables, covered as above	.....	(‡)	.....	11,306
Other manufactures	.....	163,425	.....	188,926
Totals, manufactured	.....	$277,837	.....	$385,479

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	October. 1918. Produce of Canada.	1918. Reexports of Foreign Goods.	1919. Produce of Canada.	1919. Reexports of Foreign Goods.
UNMANUFACTURED—				
Crude and waste rubber	7,764	.....	$46,352	$15,601
MANUFACTURED—				
Belting	.....	.....	$3,204	.....
Hose	$12,388	.....	29,730	.....
Boots and shoes	195,146	$204	167,820	.....
Clothing	1,889	3,412	5,150	440
Tires	278,254	3,701	520,514	5,607
All other—n. o. p.	5,409	154,948	27,677	1,672
Totals, manufactured	$493,086	$162,265	$754,095	$7,719
Chicle	$25,314	.....	$108,890	.....

*Included in "Other manufactures."
†Included in "Pens of all kinds."
‡Included in "Wire and cables," etc.

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

THE RUBBER SCRAP MARKET has not emerged from the dull state which has characterized it for several months back. Reclaimers have purchased shoe scrap in fair volume at a steady rate. The demand for tires has been mainly confined to stock suitable for rebuilding purposes. The outlet, however, has not been sufficient to prevent the accumulation of a large supply of scrap tires. This situation does not create a pessimistic feeling with the scrap dealers, who look with confidence to the spring demand from the reclaimers.

The heavy snowfalls during the middle weeks of January which were general over the North from the Middle West eastward, have tended to an increased offering of scrap shoes due to the conviction that a sufficient extra crop will result in the spring.

The scrap market is described as soft and prices have recently dropped in sympathy with a decline in crude rubber.

Quotations on shoes are firm, and in general more offerings of scrap are noted.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JANUARY 26, 1920.

Prices subject to change without notice.

BOOTS AND SHOES:			
Arctic tops	*lb.*	$0.01 @	
Boots and shoes	*lb.*	.08¼ @	.08½
Trimmed arctics	*lb.*	.06½ @	.06¾
Untrimmed arctis	*lb.*	.05¾ @	
HARD RUBBER:			
Battery jars, black compound	*lb.*	.01 @	
No. 1, bright fracture	*lb.*	.23 @	.24
INNER TUBES:			
No. 1, old packing	*lb.*	.18 @	.18½
No. 2	*lb.*	.10 @	.10¼
Red	*lb.*	.09½ @	.09¾
MECHANICALS:			
Black scrap, mixed, No. 1	*lb.*	.03½ @	.04
No. 2	*lb.*	.03 @	
Car springs	*lb.*	.03½ @	.04
Heels	*lb.*	.03 @	.03½
Horse-shoe pads	*lb.*	.03 @	.03½
Hose, air brake	*lb.*	.04¼ @	
fire, cotton lined	*lb.*	.01½ @	.01¾
garden	*lb.*	.01½ @	.01¾
Insulated wire stripping, free from fiber	*lb.*	.03½ @	.04
Matting	*lb.*	.01¼ @	.01½
Red packing	*lb.*	.05½ @	.06
Red scrap, No. 1	*lb.*	.09 @	.10
No. 2	*lb.*	.06¾ @	.07¼
White scrap No. 2	*lb.*	.08 @	.09
No. 1	*lb.*	.10 @	.11
TIRES:			
PNEUMATIC—			
Auto peelings, No. 1	*lb.*	.06¾ @	.07¾
No. 2	*lb.*	.04¾ @	.05¼
Bicycle	*lb.*	.02¾ @	.03
Standard white auto	*lb.*	.03½ @	.03⅝
Standard mixed auto	*lb.*	.03¾ @	
Stripped, unguaranteed	*lb.*	.02¾ @	
White, G. & G., M. & W., and U. S.	*lb.*	.04¾ @	.05
SOLID—			
Carriage	*lb.*	.04 @	.04¼
Irony	*lb.*	.01 @	
Truck	*lb.*	.03½ @	.03¾

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

AMERICAN COTTON. Save for a slight flurry in the third week of January, the cotton market remained extraordinarily steady and dull throughout the month as it was in the last half of December, with a daily record of no sales. On January 2 the spot price for middling uplands cotton was 39.25 cents; that price continued unchanged till January 20, save for a slight drop on one day, when it rose to 39.75 cents, sinking to 38.75 cents two days later, and getting back again to 39.25 on January 26.

EGYPTIAN COTTON. The Egyptian crop is very nearly sold and as the demand still continues from England and the Continent the market has been pushed up until today good grades of Sakel are worth about $1.25 per pound. There are some lots of Uppers in Egypt around $1.20, but desirable cottons are scarce.

ARIZONA COTTON. This year's crop has now been practically sold but a few low-grade lots can still be purchased at around 90 cents.

SEA ISLAND COTTON. The crop is fairly well cleaned up and average extra choice is quoted at 88 to 90 cents. Crops of all extra staples have proved shorter than anticipated.

DUCKS AND DRILLS. With mills working full time, even though that time has been shortened in many states, it is impossible to meet the overwhelming demand for these goods. The mills are sold up for this year to August, and buyers would be willing to contract for goods for the end of the year if the mills would sell. There is no signs yet of a return to normal conditions. The call for goods needed in the rubber business is especially strong.

RAINCOAT CLOTH. Prices have considerably advanced since last month, but during the past week gray goods have declined about one cent per yard on grades used in the raincoat trade.

TIRE FABRICS. The conditions reported in December continue in January; manufacturers are trying hard to fulfil their contracts, the mills are working overtime and still it is impossible to supply the demand because there is no prospect of being able to deliver the goods.

NEW YORK QUOTATIONS.

JANUARY 26, 1920.

Prices subject to change without notice.

ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion	*lb.*	$1.00 @	1.10
2¾ lbs. sq. yd., brass or copper insertion	*lb.*	1.10 @	1.15
BURLAPS:			
32—7-ounce	*100 yards*	10.75 @	
32—8-ounce		11.25 @	
40—7½-ounce		12.25 @	
40—8-ounce		12.50 @	
40—10-ounce		17.25 @	
40—10½-ounce		17.50 @	
45—7½-ounce		15.00 @	
45—8-ounce		15.50 @	
48—10-ounce		22.50 @	
DRILLS:			
38-inch 2.00-yard	*yard*	.42½ @	
40-inch 2.47-yard		.34⅞ @	
52-inch 1.90-yard		.65⅜ @	
52-inch 1.95-yard		.64⅛ @	
60-inch 1.52-yard		.82¼ @	
DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	*yard*	.46 @	
38-inch 1.74-yard		.52⅛ @	
72-inch 16.66-ounce		1.19⅝ @	
72-inch 17.21-ounce		1.23⅝ @	
MECHANICAL:			
Hose	*pound*	.76 @	
Belting		.76 @	
HOLLANDS, 40-INCH:			
Acme	*yard*	@	
Endurance		@	
Penn		@	
OSNABURGS:			
40-inch 2.35-yard	*yard*	.37½ @	
40-inch 2.48-yard		.35½ @	
37½-inch 2.42-yard		.36⅜ @	
RAINCOAT FABRICS:			
COTTON:			
Bombazine 64 x 60	*yard*	.29 @	
60 x 48		.26½ @	
Cashmeres, cotton and wool, 36-inch, tan		1.20 @	
Twills 64 x 72		.46 @	
64 x 102		.48 @	
Twill, mercerized, 36-inch, blue and black		.67½ @	
tan and olive		.65 @	
Tweed		.90 @	1.00
printed		.27½ @	
Plaids 60 x 48		.27 @	
56 x 44		.26 @	
Repp		.45 @	.50
Surface prints 60 x 48		.28 @	
64 x 60		.30 @	
IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING—PLAIN AND FANCIES:			
63-inch, 3¼ to 7½ ounces	*yard*	1.45 @	3.90
36-inch, 2¾ to 5 ounces		.85 @	2.25
IMPORTED PLAID LINING (UNION AND COTTON):			
63-inch, 2 to 4 ounces	*yard*	.95 @	1.90
36-inch, 2 to 4 ounces		.60 @	1.15
DOMESTIC WORSTED FABRICS:			
36-inch, 4½ to 8 ounces	*yard*	.85 @	1.90
DOMESTIC WOVEN PLAID LININGS (COTTON):			
36-inch, 3¾ to 5 ounces		.27 @	.35
SHEETINGS:			
48 x 48, 2.35-yard	*yard*	.40 @	
48 x 48, 2.50-yard		.35 @	
48 x 48, 2.70-yard		.34¾ @	
48 x 48, 2.85-yard		.33 @	
64 x 68, 3.15-yard		.33 @	
56 x 60, 3.60-yard		.31 @	
SILKS:			
Canton, 38-inch	*yard*	.75 @	
Schappe, 36-inch		1.00 @	
STOCKINETTES:			
SINGLE THREAD:			
3½ Peeler, carded	*pound*	—@—	
4½ Peeler, carded		1.15¼ @	1.15¾
6½ Peeler, combed		—@—	
DOUBLE THREAD:			
Zero Peeler, carded	*pound*	.98¼ @	.98½
3½ Peeler, carded		1.04⅛ @	1.04½
6½ Peeler, combed		2.70¼ @	2.70½
TIRE FABRICS:			
BUILDING:			
17¼-ounce Sea Island, combed	*pound*	2.25 @	
17¼-ounce Egyptian, combed		2.00 @	
17¼-ounce Egyptian, carded		1.80 @	
17¼-ounce Peelers, combed		2.25 @	
17¼-ounce Peelers, carded		1.30 @	
CHAFER:			
9¼-ounce Sea Island	*pound*	2.75 @	
9¼-ounce Egyptian, carded		2.25 @	
9¼-ounce Peeler, carded		1.40 @	

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

AKRON OFFICE
407 Peoples Savings & Trust
Co. Building.

HIGH AND LOW POUND QUOTATIONS ON 17¼-OUNCE TIRE BUILDING FABRICS FOR 1919, BY MONTHS.

	Sea Island.		Sakellarides.		Combed Egyptian.		Combed Peeler.		Carded Peeler.	
	High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.
January	1.50	1.45	1.45	1.40	1.20	1.20	1.05	1.05	.89	.83
February	1.50	1.38	1.40	1.31	1.20	1.20	1.05	1.00	.85	.75
March	1.35	1.30	1.31	1.27	1.20	1.16	1.00	.95	.78	.75
April	1.31	1.27	1.27	1.25	1.15	1.12	1.00	.97	.78	.74
May	1.40	1.30	1.35	1.27	1.22	1.13	1.10	1.00	.80	.75
June	1.45	1.40	1.40	1.35	1.20	1.19	1.20	1.10	.95	.85
July	1.50	1.45	1.42	1.38	1.25	1.20	1.21	1.18	1.00	.95
August	1.60	1.55	1.55	1.45	1.30	1.30	1.30	1.25	1.05	1.00
September	1.60	1.60	1.55	1.55	1.38	1.30	1.33	1.30	1.00	1.00
October	1.85	1.60	1.81	1.55	1.65	1.37	1.65	1.37	1.20	1.00
November	2.00	1.90	2.00	1.80	1.90	1.68	1.90	1.65	1.30	1.20
December	2.35	2.05	2.35	2.00	2.20	1.85	2.15	1.85	1.45	1.30

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1919, TO NOVEMBER 26, 1919.

		1919-1920.	1918-1919.	1917-1918.
To Liverpool	*bales*	135,718	78,113	71,741
Manchester		63,495	38,734	20,738
Other United Kingdom ports		145	5,537	.....
Total shipments to Great Britain		199,358	122,384	92,479
To France		14,460	702	10,309
Spain		4,507	10,140	1,484
Italy		7,644	17,270	12,272
Belgium		230	.....	.....
Switzerland		5,218	3,116	.....
Holland		130	.....	.....
Portugal		250	.....	.....
Austria		1,917	.....	.....
Greece		87	3,213	.....
Turkey and other countries		73	.....	.....
Total shipments to Continent		34,516	34,441	24,065
To United States		75,037	11,792	13,530
Japan		6,545	5,411	9,914
Total shipments to all parts		315,456	174,028	139,988
Total crop (interior gross weight), cantars[1]		.....	4,826,342	6,315,841

[1] A cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE GENERAL CONDITION of short supply, on the whole, has not materially changed in most lines. The demand is fully up to the producing capacity for the standard compounding materials, and prices have been advanced in some lines.

The production of lead and zinc in the United States, according to report from governmental sources, experienced a very marked decline in 1919 over the normal output, owing to labor and other controlling conditions.

ANILINE OIL. Spot supplies available are offered at 34 to 36 cents per pound.

BARYTES. During the first half of the month there were no quotations; later, $23 to $25 per ton was named.

BENZOL. There are but small spot stocks available, held at 32 cents per gallon.

LITHARGE. Production is sold far ahead with demand very active at an advance of ½ cent per pound effective early in the month.

LITHOPONE. The demand holds very strong, with prices firm at 7¼ to 7½ cents per pound.

NAPHTHA. Early in the month increasing spot stocks indicated a decline in price by February first. At this date spot is quoted at 32 cents per gallon.

SUBLIMED LEAD. Early in January the price advanced to 8½ to 9 cents, the first increase in a considerable time. The demand exceeds the supply. Later in the month sublimed lead was quoted at 8¾ to 9 cents.

WHITING. The scarcity of chalk imports has lead to an advance in whiting prices which are very firm.

ZINC OXIDE. The advance which was expected early in the month proved to be ⅛-cent per pound on all grades. It was attributable to the increased cost of spelter and cooperage.

NEW YORK QUOTATIONS.

JANUARY 26, 1920.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.				
Accelerator, N. C. C.	*lb.*	$0.50	@	
Accelerene, New York	*lb.*	4.75	@	
Accelemal	*lb.*	.55	@	.57½
Aldehyde ammonia crystals	*lb.*	1.28	@	1.38
Aniline oil	*lb.*	.35	@	
Excellerex	*lb.*	.65	@	.75
Hexamethylene tetramine (powdered)	*lb.*	1.28	@	1.38
Paraphenylenediamine	*lb.*	2.50	@	3.00
Thiocarbanilide	*lb.*	.55	@	.75
ACCELERATORS, INORGANIC.				
Lead, dry red (bbls.)	*lb.*	.11¾	@	
sublimed blue (bbls.)	*lb.*	.09¼	@	
sublimed white (bbls.)	*lb.*	.09¼	@	
white, basic carbonate (bbls.)	*lb.*	.10	@	
Lime, flour	*lb.*	.02¼	@	.02½
Litharge, domestic	*lb.*	.09¾	@	.10½
sublimed	*lb.*	.11½	@	
imported	*lb.*	.11½	@	.12½
Magnesium, carbonate	*lb.*	.12	@	.16
calcined heavy (Thistle)	*lb.*		@	
light (Manhattan)	*lb.*		@	
Magnesium oxide	*lb.*	.75	@	
commercial	*lb.*	.23	@	
Magnesite, calcined	*ton*	50.00	@	65.00
ACIDS.				
Acetic, 28 per cent (bbls.)	*lb.*	.03	@	
glacial, 99 per cent (carboys)	*lb.*	.12½	@	
Cresylic (97% straw color) (drums)	*gal.*	.95	@	
(95% dark) (drums)	*gal.*	.85	@	
Muriatic, 20 degrees	*cwt.*	1.75	@	2.00
Nitric, 36 degrees	*lb.*	.06	@	.06½
Sulphuric, 66 degrees	*ton*	20.00	@	22.00
ALKALIES.				
Caustic soda, 76 per cent (bbls.)	*lb.*	.05	@	
Soda ash (bbls.)	*lb.*	.03½	@	
COLORS.				
Black:				
Bone, powdered	*lb.*	.07	@	
granulated	*lb.*	.11	@	
Carbon black (sacks, factory)	*lb.*	.13	@	
Drop	*lb.*	.12	@	
Ivory black	*lb.*	.12	@	
Lamplack	*lb.*	.16	@	
Oil soluble aniline	*lb.*	1.25	@	
Rubber black	*lb.*	.08½	@	
Blue:				
Cobalt	*lb.*	.25	@	.35
Prussian	*lb.*	.85	@	
Ultramarine	*lb.*	.18	@	.40
Brown:				
Iron oxide	*lb.*	.03	@	.03½
Sienna, Italian, raw and burnt	*lb.*	.05¾	@	.15
Umber, Turkey, raw and burnt	*lb.*	.05	@	.07½
Vandyke	*lb.*	.02½	@	.03½
Green:				
Chrome, light	*lb.*	.37	@	.50
medium	*lb.*	.40	@	.50
dark	*lb.*	.50	@	
commercial	*lb.*	.14	@	
Oxide of chromium (casks)	*lb.*	.75	@	.90
Red:				
Antimony, crimson, sulphuret of (casks)	*lb.*	.45	@	.50
crimson, "Mephisto" (casks)	*lb.*	.60	@	
crimson, "R. M. P."	*lb.*	.60	@	
Antimony, golden sulphuret of (casks)	*lb.*	.30	@	.35
golden sulphuret (States)	*lb.*	*.30	@	
golden, "Mephisto" (casks)	*lb.*	.33	@	
golden, "R. M. P."	*lb.*	.33	@	
red sulphuret (States)	*lb.*	*.25	@	
vermilion sulphuret	*lb.*	.55	@	
Arsenic, red sulphide	*lb.*	.18	@	
Indian	*lb.*	.14	@	
Toluidine toner	*lb.*	3.75	@	

Iron oxide, reduced grades	lb.	.04½	@	.14
pure bright	lb.	.16	@	
Spanish	lb.	.04¼	@	.04¾
Venetian	lb.	.02½	@	.05
Oil soluble aniline, red	lb.	2.00	@	
orange	lb.	1.75	@	
Oximony	lb.	.18	@	
Vermilion, American	lb.	.25	@	.30
artificial	lb.	.35	@	
English quicksilver	lb.	1.55	@	1.65

White:

Aluminum bronze, C. P.	lb.	.51	@	
superior	lb.	.55	@	
Lithopone, domestic	lb.	.07¼	@	.07¾
Ponolith (carloads, factory)	lb.	*.07	@	.07¼
Rubber-makers' white	lb.	.11¼	@	
Zinc oxide, Horsehead (less carload, factory):				
"XX red"	lb.	.08⅜	@	.09⅛
"Special"	lb.	.09⅜	@	.09⅞
French process, red seal	lb.	.11¼	@	.11¾
green seal	lb.	.12¼	@	.12¾
white seal	lb.	.13¼	@	.13¾
(States)	lb.	*.08½	@	
Azo, ZZZ, lead free (carload factory)	lb.	.08⅜	@	.09⅛
ZZ, under 5% leaded (carload factory)	lb.	.08⅜	@	.08⅝
Z, 8-10% leaded (carload factory)	lb.	.07⅞	@	.08⅛

Yellow:

Cadmium, sulphide, yellow, light, orange	lb.	2.00	@	
red	lb.	1.85	@	
Chrome, light and medium	lb.	.26	@	
Ochre, domestic	lb.	.03	@	.07
imported	lb.	.05½	@	.07½
Oil, soluble aniline	lb.	2.00	@	
Zinc chromate	lb.	.40	@	

COMPOUNDING INGREDIENTS.

Aluminum flake	ton		@	
Ammonia carbonate, powdered	lb.	.17	@	.17½
Asbestine (carloads)	ton	22.50	@	25.00
Asbestos (bags)	ton	*35.00	@	
Avoilas compound	lb.	.33	@	
Barium, carbonate, precipitated	ton	80.00	@	
sulphide, precipitated	lb.	.07	@	
dust	ton	90.00	@	
Barytes, pure white	ton	32.50	@	40.00
Barytes, off color	ton	23.00	@	25.00
uniform floated	ton	37.50	@	40.00
Basofor	lb.	.05	@	
Blanc fixe	lb.	.04½	@	
Bone ash	lb.	.10	@	
Chalk, precipitated, extra light	lb.	.05	@	.05½
heavy	lb.	.04	@	.04½
China clay, Dixie	ton	20.00	@	
domestic	ton	18.50	@	20.00
imported	ton	18.00	@	23.50
Shawnee	ton	18.00	@	
Cotton linters, clean mill run, f. o. b. factory	lb.	.04	@	
Fossil flour (powdered)	ton	60.00	@	
(bolted)	ton	65.00	@	
Diatomite	lb.	.02½	@	
Glue, high grade	lb.	.30	@	.45
medium	lb.	.20	@	.30
low grade	lb.	.13	@	.20
Graphite, flake (400-pound bbl.)	lb.	.10	@	.30
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth (powdered)	ton	60.00	@	
(bolted)	ton	65.00	@	
Liquid rubber	lb.	.17½	@	
Mica, powdered	lb.	.08½	@	.09
Fumice stone, powdered (bbl.)	lb.	.05	@	
Rotten stone, powdered	lb.	.02½	@	.04½
Rub-R-Glu	lb.	*.20	@	.25
Silex (silica)	ton	22.00	@	40.00
Starch, powdered corn (carload, bbls.)	cwt.	5.34	@	
(carload, bags)	cwt.	5.12	@	
Talc, powdered soapstone	ton	22.50	@	25.00
Tripoli earth, air-floated	ton	50.00	@	
Tyre-lith	ton	50.00	@	
Whiting, Alba (carloads)	cwt.	.80	@	.90
Columbia	cwt.	.80	@	
commercial	cwt.	1.15	@	1.20
English cliffstone	cwt.	1.75	@	2.50
gilders	cwt.	1.35	@	
Paris, white, American	cwt.	1.75	@	
Quaker	ton	14.00	@	
Wood pulp, imported	lb.	.03¾	@	
Wood flour, American	lb.	.02	@	

MINERAL RUBBER.

Gilsonite	ton	52.50	@	65.00
Genasco (carloads, factory)	ton	55.00	@	
(less carloads, factory)	ton	57.00	@	
Hard hydrocarbon	ton	35.00	@	
K-X	ton	30.00	@	
K. M. R.	ton	50.00	@	80.00
M. R. X.	ton	100.00	@	
Pioneer, carload, factory	ton	*55.00	@	
less carload, factory	ton	*57.00	@	
Raven M. R.	ton	50.00	@	70.00
Refined Elaterite	ton	175.00	@	
Richmond	ton	75.00	@	
No. 64	ton	44.00	@	
318/320 M. P. hydrocarbon	ton	50.00	@	
Robertson, M. R. Special (carloads, factory)	ton	70.00	@	
M. R. (carloads, factory)	ton	55.00	@	57.50
Walpole rubber flux (factory)	lb.	.05	@	

OILS.

Castor, No. 1, U. S. P.	lb.	.20	@	
No. 3, U. S. P.	lb.	.19	@	
Corn, refined Argo	cwt.	23.56	@	
Cotton	lb.	.23	@	
Glycerine (98 per cent)	lb.	.27	@	.29
Glycerole	lb.	.55	@	
Linseed, raw (carloads)	gal.	1.85	@	
Linseed compound	gal.	.85	@	
Palm (Niger)	lb.	.17	@	
Peanut	lb.	.27	@	
Petrolatum	lb.	.07	@	
Petroleum grease	lb.	.04¼	@	
Pine, steam distilled	gal.	1.45	@	
Rapeseed, refined	lb.	.21	@	
blown	lb.	.22	@	
Rosin	gal.	.95	@	
Soya bean	lb.	.19	@	
Tar	gal.	.37	@	.43

RESINS AND PITCHES.

Cantella gum	lb.	.55	@	
Tar, retort	bbl.	15.00	@	15.50
kiln	bbl.	15.00	@	15.50
Pitch, Burgundy	lb.	.09	@	
coal tar	bbl.	7.50	@	
pine tar	lb.	.04	@	
ponto	lb.	.14	@	
Rosin	bbl.		None	
granulated	lb.		None	
fused			None	
Rosin, K	bbl.	21.00	@	
Shellac, fine orange	lb.	1.65	@	1.75

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.16	@	
methyl (drums)	gal.	1.15	@	
Benzol, water white	gal.	.27	@	.31
Beta-naphthol, resublimed	lb.	1.00	@	
ordinary grade	lb.	.55	@	
Carbon bisulphide (drums)	lb.	.05½	@	.06¼
tetrachloride (drums)	lb.	11½	@	.13
Naphtha, motor gasoline (steel bbls.)	gal.	.26½	@	
72 @ 76 degrees (steel bbls.)	gal.	.36½	@	
68 @ 70 degrees (steel bbls.)	gal.	.33½	@	
V. M. & P. (steel bbls.)	gal.	.25½	@	
Toluol, pure	gal.	.28	@	.32
Turpentine, spirits	gal.	1.94	@	
wood	gal.	1.60	@	
Osmaco reducer	gal.	.35	@	
Xylol, pure	gal.	.40	@	.45
commercial	gal.	.30	@	.35

SUBSTITUTES.

Black	lb.	.11	@	.22
White	lb.	.11	@	.24
Brown	lb.	.15	@	.23
Brown factice	lb.	.10	@	.22
White factice	lb.	.12	@	.23
Paragol, soft and medium (carloads)	cwt.	18.58	@	
hard	cwt.	18.08	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.52	@	.56
Orange mineral, domestic	lb.	.14¾	@	
Sulphur chloride (drums)	lb.	.06½	@	.07
Sulphur, flour, Brooklyn brand (carloads)	cwt.	3.15	@	
pure soft (carloads)	cwt.	3.40	@	
superfine (carloads, factory)	lb.	.02¾	@	

(See also Colors—Antimony.)

WAXES.

Wax, beeswax, white	lb.	.65	@	.68
ceresin, white	lb.	.16	@	.18
carnauba	lb.	.47	@	.48
ozokerite, black	lb.	.58	@	.60
green	lb.	.87	@	.88
Montan	lb.	.28	@	.30
substitute	lb.		None	
paraffine, refined 118/120 m. p. (cases)	lb.	.09½	@	
123/125 m. p. (cases)	lb.	.09¾	@	
128/130 m. p. (cases)	lb.	.10¾	@	

*Nominal.

IF PROPERLY IRRIGATED, EGYPT'S AREA CULTIVABLE IN COTTON, would be 6,976,000 acres, of which in round numbers 3,000,000 acres would be given up to cotton annually, according to present methods, and would yield over 11,000,000 hundred-weight of cotton, according to the present yield per acre.

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